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ABSTRACT

This document comprises the entire output of this journal for 1996. Article titles include the following: "Application of Learning Styles in Accelerative Learning and Teaching"; "Learning Styles: A Synthesized Model"; "Using Learning Styles in Education: Research and Problems"; "Teaching Students through Their Culturally Specific Learning Styles"; "Examining the Relation of Learning Styles and Vocational Choice"; "Effects of Supervisor Instructional and Supervisee Learning Styles on Development of Basic Counseling Skill Competency"; "Role Playing in Accelerative Teaching"; "On Reading, Teaching Reading and Affective Semantics"; and "Study of Health Condition, Locus of Control and Self-Concept of Adult Students in the Process of Foreign Language Suggestopedic Learning." All the articles focus on the latest ideas and empirical research in the field of accelerated learning and teaching. (Each article contains references.) (KFT)

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Nancy Omaha Boy, Editor

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Journal of Accelerated Learning and Teaching

Daya Singh Sandhu, Ph.D.
University of Louisville
Guest Editor

Nancy Omaha Boy, Ph.D.
Rutgers University
406 Penn St.
Camden, NJ 08102
Executive Editor
omaha@crab.rutgers.edu
fax: 609-225-6356

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Iowa State University
Production

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Volume 21, Issue 1 & 2 Spring 1996

Application of Learning Styles in Accelerative Teaching and Learning

Daya Singh Sandhu, Guest Editor
University of Louisville

Editorial introduction.

Efforts to provide the best possible education through the most effective ways dates back to the Greek philosophers. However, there has been a constant change in the focus. In an educational triangle that consists of a student, subject matter, and a teacher, making a student as a ***cynosure*** or making educational process as student-centered in America is a by-product of the Civil Rights Movement of the 1960s. There came a paradigm shift, because of the Civil Rights Movement, a change from ***elitism*** to ***egalitarianism.*** As a result, the glorification of the individual gained momentum, without consideration of race, gender, and ethnic group affiliation. "Education for not only the privileged, but for all" became the catchword. Also, it created an awakening that we don't only teach a subject matter, but also an individual whose personality, interests and individual needs can not be overlooked.

Philosophically speaking, this shift in our paradigm

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called for not only equal opportunity to ***accede,*** but also to ***proceed*** and ***succeed.*** In other words, granting all students an equal opportunity to learn is NOT enough, it is imperative that all students from all backgrounds, ethnic, economic, and cultural are afforded ***equitable conditions*** to attain the best possible success at par with others. For this reason, if the 1970s were a call for equal opportunity, the 1980s a clamor for excellence, 1990s became a cry for equity. In education this equity is grounded in the beliefs that all students can learn and they can learn at the highest levels. But if there are any differences in learning these difference are attributed to the varied learning styles of the students. In order to achieve equity in education, teachers should teach in the individualized learning styles of their students. Surprisingly, the underpinning philosophy of learning styles theory is strikingly similar to Lozanov's suggestopediac approaches to accelerate learning and teaching. Hence, the rationale to devote this special issue of Journal for Accelerative Learning and Teaching to learning styles. In the judicious words of our former editor Pedro Portes (1993), here again "The present collection reflects also an effort to broaden the horizons of the journal by making it a truly open forum for innovative ideas that improve educational practice" (p. 3).

Obviously, a cursory review to compare theory of learning styles with suggestopedia and suggestology needs to be presented. Keeping in mind space limitations in this introduction, a comparison of Lozonov's theories as summarized by Wendy Whitacre (1994) from Chiba University, Japan with, Dunn and Dunn's (1978) Learning Styles theory should suffice. In order to increase learning and retention, Lozanov (1978) emphasized the whole brain approaches to teaching. Teachers must consider non-verbal communication, music, and visualizations as an integral part of their

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pedagogical package. Focus on recognition of ***hemisphericity*** of the students became an impetus to enhance learning. Dunn and Dunn (1978) on the other hand included **hemisphericity** as an important part of the psychological categorization of learning styles to identify two types of learners, global and analytic and impulsive versus reflective. The major point here is that both Suggestopedia and Learning Styles theories recognize the importance of hemisphericity.

Suggestopedia and Learning Styles theories both underscore the significance of a classroom environment which is conducive to learning. Relaxation and music are the corner stones of suggestopedia. For this reason, a number of empirical studies investigated Lozanov's theories to determine whether or not students learn better when they are relaxed and when music creates a pleasing classroom climate (Eastman, 1993; Felix, 1993; Palmer and Dhority, 1993; Portes, Best, Sandhu, & Cuentas, 1992; Schuster & Gritton, 1986). Dunn, Dunn's (1978) Learning Styles Theory on the other hand also focuses on classroom environmental conditions to include suitable sound, light, temperature and design as the prerequisites to better learning. To implement Dunn, Dunn and Dunn's (1978) recommendations, some students are encouraged to use bright light, others dim light, some students may work at their desks, others may choose to use rugs and pillows (Lemmon, 1985). The main purpose is to create a relaxing classroom climate according to the special preferences of every student.

The third common feature between Suggestopedia and learning styles theory is ***motivation.*** Whitcare (1994) pointed out that motivation is an important aspect of Lozanov's concept of suggestion. However, there is a marked change from external motivation based on reinforcers to intrinsic motivation determined by one's self-efficacy (Bandura, 1986). In suggestopedia, it is the intrinsic motivation which is the real

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focus of learning and teaching strategies. Dunn and Dunn (1978) included motivation as a part of emotional categorization of learning styles. More importantly these authors have identified parents and teachers as two additional sources of motivation beside self-motivation.

Finally, there seems to be no better meeting place of Suggestopedia and the Learning Styles Theory than the concept of ***personality.*** Several educational psychologists propose that as students have different personalities, they also have differing learning styles. The ideas about cognitive styles and learning styles, field dependence and field independence, and learners as analytic and holistic are not new to Lozanov's suggestopedia and in the field of Second Language Acquisition. Both Suggestopedia and Learning Styles theories are a gigantic bold step to facilitate learning and retention of the learned materials.

The lead article in this issue begins with a Synthesized Model of Learning Styles. In this article, Barbara K. Given presents an excellent overview of learning styles and accelerative learning based approaches. This review is of both historical and conceptual nature. The readers will find this review interesting and informative. A large gamut of diverse viewpoints ranging from Jungian psychology, Gregorc's phenomenology, Lozanov's suggestology to Dunn & Dunn's sociology and physiology and Dennison's educational kinesiology are all touched. Given's own synthsizeology shown in "The Onion Model" is really a praiseworthy contribution.

In the next article, David Lemire identifies some problems in the practical applications of learning style concepts. Lemire also makes some valuable recommendations for school psychologists in their assessment procedures and practices. Several precautions such as "match, adaptability,

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versatility, interaction and stretch" are presented to help the practitioners. Lemire is cautiously supportive of the learning styles concepts and highlights his concerns for the benefit of the readers.

Are learning styles specific to cultural and ethnic backgrounds of the individuals? Sadhu, Fong and Rigney present an overview of the impact of culture on the learning strategies to provide an answer to this important question. These authors avouch that learning can be accelerated if teachers match their teaching styles with their students' culturally specific learning styles. Furthermore, these authors contend that to be politically correct and to create gender and ethnically equitable conditions in education, students must be taught through the styles they learn the best.

In the next paper, Portes, Adams, and Sandhu examine the relation between learning styles and vocational choices of entering freshmen and fresh women students. These authors postulate that career satisfaction can be enhanced if students are encouraged to make vocational choices that are compatible with their learning styles. In addition to aptitude and interest inventories, identification of learning styles could also be used as an important method to help students make occupational choices. This empirical study suggested that learning styles of students enrolled in arts programs remain fairly consistent before when compared with the learning styles of students studying other subjects.

In the final article, Ellington and Gilroy present the results of their empirical study in which they attempted to study the effects of matching and mismatching of supervisee and their supervisors cognitive styles. However, these authors concluded that there seems to be insignificant importance of cognitive styles compatibility in the supervision process. In

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order to enhance efficacy of supervisory practices and procedures, the authors recommend interpersonal dynamics must be considered while matching supervisee with their supervisors.

Daya Singh Sandhu

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Learning Styles: A Synthesized Model

Barbara K. Given,
Associate Professor, George Mason University, Fairfax, VA

Research consistently reveals that when students are taught through their preferred versus their non preferred learning style they demonstrate: a) statistically significant improvement in their attitudes toward instruction, b) increased tolerance for cognitive diversity, c) statistically significant increased academic achievement, d) better discipline/behavior, and e) greater self-discipline for homework completion (Andrews, 1990; Butler, 1986; Brunner & Majewski, 1990; Dunn, Griggs, Olson, Beasley, & Gorman, 1995; Elliot, 1991; Gadwa & Griggs, 1985; Klavas, 1993; Lemmon, 1985; McCarthy, 1990; Orsak, 1990; Stone, 1992).

Principles upon which accelerative learning was founded by Dr. Georgi Lozanov (1979) are essentially the same as those promoted by style-responsive enthusiasts: That is, learning is accelerated when opportunities to learn are matched to individuals' natural inclination to play, explore and investigate in a relaxed manner. Generally, this happens

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most often during the preschool years and comes to a screeching halt once formal schooling begins. At least, that was the scenario at the time Lozanov investigated methods to increase the retention and recall of information. He recognized that educational conventions, restrictions, requirements and structures often hampered rather than fostered learning. Consequently, Lozanov investigated techniques to promote learning that launched the accelerative learning movement.

As neuroscientific research on brain functioning, language development and learning accumulates, programs in the United States and around the world are shifting from authoritative, rigid classrooms to ones that incorporate teaching environments compatible with naturally occurring learning. Therefore, schooling today is often more experiential, playful, relaxed and nurturing than in the past. How to make this shift is a critical question, and school division personnel often lack clarity on how to go about it. One place to begin is with style-responsive instruction. Because it is compatible with principles of accelerative learning, teachers can make the shift gradually by addressing one learning style element at a time. As documented above, learning style instruction can accelerate learning in a relatively short time period when done systematically. Once success is realized in terms of enhanced student motivation for learning and increased academic achievement, the momentum of success can fuel continued style-responsive modifications.

Categorization of learning style approaches in this article is intended to show overlap and compatibility among learning style models and accelerative learning in the hope that accelerative learning practitioners will be more prepared to make informed decisions about style-responsive instruction

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for their settings.

Learning Style Models

Learning style is described as a set of ". . . traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (Keefe, 1982, p. 44). There are hundreds of approaches or models to learning style, and they tend to fall into one or more of the following five categories: a) personality and emotional models, b) psychological, cognitive and information processing models, c) social models, d) physical models, and e) environmental and instructional models.

Emotional/Personality Models of Learning Style. Carl Jung is the most influential historical figure regarding identification of psychological types. In the early 1900s, Jung (in Kolb, 1984) divided major emotional and personality characteristics into four bipolar clusters: extroversion/introversion (E or I), sensation/intuition (S or N), thinking/feeling (T or F), and judging/perceiving (J or P). Subsequently, Isabelle Myers (Myers & Briggs, 1976) and her mother Katherine Briggs developed the Myers-Briggs Type Indicator (MBTI), a translation of Jungian theory into an assessment instrument for practical purposes. Results of the MBTI identify an individual's type from sixteen combinations of the four bipolar factors (figure 1): ISTJ, ISTP, ISFJ, ISFP, ESTP, ESFP, ESTJ, DSFJ, INFJ, INTJ, INFP, INTP, ENFP, ENTP, ENFJ, ENTJ.

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In contrast to the MBTI, David Kolb (1984) combined Jung's

Figure 1. Jung's Psychological Types

Mode of relation to the world	E EXTROVERT TYPE Oriented toward external world of other people and things.	I INTROVERT TYPE Oriented toward inner world of ideas and feelings.
Mode of decision making	J JUDGING TYPE Emphasis on order through reaching decision and resolving issues.	P PERCEIVING TYPE Emphasis on gathering information and obtaining as much data as possible.
Mode of perceiving	S SENSING TYPE Emphasis on sense perception, on facts, details, and concrete events.	N INTUITION TYPE Emphasis on possibilities, imagination, meaning, and seeing things as a whole.
Mode of judging	T THINKING TYPE Emphasis on analysis, using logic and rationality.	F FEELING TYPE Emphasis on human values, establishing personal friendships, decisions made mainly on beliefs and likes.

From D. Kolb (1984), p. 80.

psychological types with concepts from Piaget, Dewey and Lewin and constructed a bidimensional model resulting in four basic types or styles: diverger, assimilator, conveger, and accommodator. The vertical axis in Kolb's model represents a continuum of preferences for how information is grasped or perceived which ranges from apprehending concrete experiences to comprehending abstract concepts. The horizontal axis represents how information once perceived is transformed into meaning. At one end is active experimentation with reflective observation at the other end. It is the crossing of these two continua that creates Kolb's four major learning styles.

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Anthony Gregorc (1982) also created a bidimensional model by combining Jungian concepts with phenomenology. He called his four "mind channels" concrete sequential, abstract sequential, abstract random, and concrete random learning styles. Gregorc believes that individuals can adjust to varying circumstances through their non-dominant channels so long as the dominant style is permitted opportunity to develop. Kathleen Butler (1986) translated Gregorc's work for educational application as presented later.

Another application of Jung's theoretical model was designed by Susan Dellinger (1989) who assigned a geometric shape to each of the four major types—squiggle, circle, box, and triangle. She then added an extra shape, a rectangle, to represent transition from one style to another for the person who is exploring and experimenting with different styles. Transition often happens, she concluded, when individuals are in new or unfamiliar circumstances. Dellinger's shapes offer a playful way to introduce the learning style concept.

Dunn and Dunn (1992; 1993) investigated emotional factors of style including how students are motivated to learn, how persistent they are when pursuing a task, and the level of responsibility assumed for completing the task [See figure 2]. The Dunns focused on the source of motivation as coming from internal desires, authority figures or peers. Persistence, they concluded, involves a preference for keeping with a task until it is completed versus taking frequent breaks and having many activities started before finishing one. Under emotionality the Dunns also included an individual's need for specific, well-defined task structure versus a preference for broad explanations with freedom to add one's own structure.

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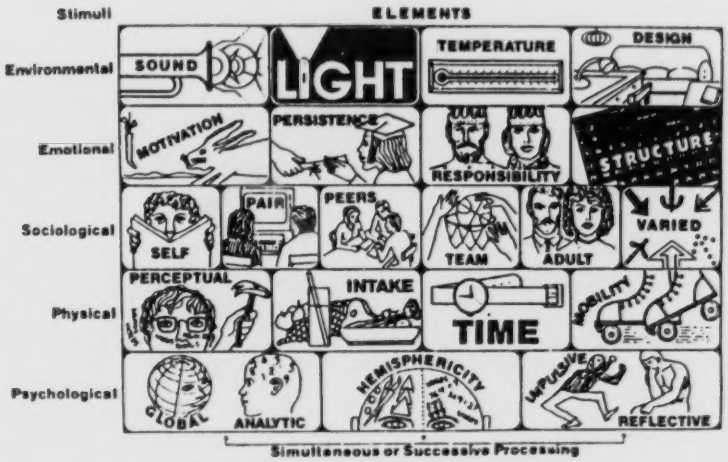
Figure 2. Dunn and Dunn Learning Styles Model.



Dunn & Griggs, 1990, p. 262. Reprinted with permission

Sociological Approaches to Learning Style. Consistent preferences for working alone, with one or more peers, in a team, with an adult or authority figure or in a variety of social groupings defines, in part, one's social learning style (Dunn and Dunn, 1993). Other approaches include aspects of personality as critical to social preferences. For example, Grasha (1972) developed learning style scales which included: independent, dependent, collaborative, competitive, participant, and avoidant learning patterns. When matching teaching methods to these identified patterns of student behaviors, Grasha and associates found that students learned best in settings where their social-emotional needs were met.

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Matching social settings with consistent social patterns tends to be an area in need of caution. Dunn and Dunn (1992) stated that "Students who have been parent- or teacher-directed for most of their lives should first learn to make simple decisions and to assume the responsibility for completing simple tasks free of constant adult supervision" (p. 115). Brandt (1983) warned that matching dysfunctional patterns can increase the dysfunction. For example, he identified three dysfunctional styles that may appear functional. They were the acquiescent, self-important, and deprived styles. Brandt said the acquiescent style reveals a history of parental over-direction and intrusiveness. When the child has little opportunity for decision-making and self-determination, there is a loss of inner direction, excessive reliance on approval, expectations to satisfy others rather than self, and disappointment in self for failing to measure up to others' expectations. According to Brandt, such a person may reveal a strong preference for working with an authority figure. Thus, by providing consistent adult direction and validation, the dependent child may fail to develop a sense of self.

By contrast, Brandt continued, a child reared with high levels of gratification, praise, and social approval for his or her actions may develop a strong expectation that others will maintain the favored position the child enjoyed in the family constellation. Thus, his or her high expectations for favored treatment and grandiose sense of self importance are likely to be directly related to a sense of entitlement for special treatment. When it is withheld in school, at work or in other social setting, disappointment and a sense of lost specialness causes that person to behave in hopes of recapturing what is thought to be rightfully deserved.

At the opposite end of the continuum is the person

with a deprived style who may choose working alone out of fear of rejection, fear of abandonment, a sense of neediness accompanied by a despair that his or her needs will never be met. Because of a history of these realities, this person may lash out against society and prefer to be alone. High expectations for the worst tend to rule this person's life and negative social interactions serve as a defense against hurt feelings. Boo (1995), a journalist for the Washington Post Newspaper, identified this style as common among incarcerated adolescent girls where there is a history of physical and sexual abuse. Brandt believed these dysfunctional styles can be changed to healthy styles through therapy and hard work. Boo (1995) cited several case studies to document how difficult it is to change even when individuals are placed in nurturing surroundings. These dysfunctional social styles can have a deleterious effect on learning, thus instruction needs to be skillfully presented to help the learner move into more healthy social interaction patterns.

Information Processing Approaches to Learning Style. Cognitive psychologists tend to use independent bipolar dimensions such as sequential vs simultaneous (Kaufman & Kaufman, 1984) and field independent vs field dependent (Witkin, 1976). Letteri (1982) synthesized several of these models into a composite whole and then studied student profiles in comparison to academic achievement. He found that profiles of traditional high achieving students were high on analytic, focused, narrow, complex, reflective, sharpened, and tolerant characteristics. He then developed a tutorial program to strengthen non-preferred polar dimensions of students whose profiles differed from the one just presented. Letteri's remedial approach is in direct contrast to Dunn and Dunn (1993) who believe that by honoring alternative learning styles, low and average achieving students can be just as

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successful as traditional "good" students.

The Dunns included three bipolar psychological styles in their model: global/analytic, left brain/right brain hemisphericity, and impulsive/reflective response patterns. They described global/analytic and left brain/right brain as synonymous for instructional purposes. To them, a global learning style is just as effective as an analytic one even though the two function differently. They believe instruction rather than the child should be remediated.

Physical Approaches to Learning Style. Sensory modalities (visual, auditory, tactile and kinesthetic) are other primary ways researchers categorize learning style. A modality approach has high face validity because of its practical clarity. For example, individuals often display insights into the way they best learn by their comments: "Don't tell me. Show me; I'm a visual learner." Or "If I write it, I can tell if it's spelled right." "I learn best when I do it myself." "I get confused with maps, just tell me how to get there." The majority of researchers study the impact of sensory modalities under the information processing category rather than within the physical domain. Rationale can be found for either approach. First, the senses are biological entities thus they may be considered physical. Second, they play key roles in how learning occurs; therefore, they can be considered as information processing elements.

Barbe and Swassing (1979) were among the first to develop a standardized performance measure of learning style based on modality strengths. Their kit includes a set of plastic shapes which are assembled in sequence after seeing them, feeling them with closed eyes, or hearing someone read the sequence (circle, square, triangle, cross). Modality strength is determined by the greatest number of correct pieces

assembled. By contrast, Grinder and Bandler (Grinder, 1991) determine modality preferences by evaluating a person's eye movements, language usage, the pace of language delivery, body movements, and reactions to learning experiences. They pay close attention to verbs used in conversation as signals for modality strengths. For example, "I see what you mean," suggests a visual learner. "I hear you," suggests auditory preferences while, "I get what you mean," or "It feels right to me," suggest tactile or kinesthetic learning preferences.

Other than tactile and kinesthetic modality preferences, few researchers include physical aspects of learning in their models, yet recent neuroscientific evidence strongly suggests that the brain is housed within the whole body and not just in the brain (Pert, 1993). Dunn and Dunn (1992, 1993) are notable expectations, because they recognized that some persons like to snack and/or walk around intermittently when studying or taking tests. They also noted that chronobiological rhythms play a key role in determining peak cognitive functioning and that the first periods of the day may not be advantageous to teaching reading to some children (Dunn & Dunn, 1992, 1993). The need for mobility, food intake, and tactile-kinesthetic learning characteristics correlate highly with characteristics of global learners whereas sustained focus, remaining seated and on task until task completion correlate with an analytic style and higher achievement (Dunn & Dunn, 1992, 1993).

From a meta-analysis of 36 experimental studies conducted between 1980 and 1990 using the Dunn and Dunn model, greatest achievement gains were realized when teachers modified instruction according to the physiological elements than when any other style responsive instruction was implemented (Dunn, Griggs, Olson, Beasley, & Gorman,

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1995). These findings are understandable when we realize that upwards to 90% of primary children and 60% of secondary learners have global preferences (Dunn & Dunn, 1993). In separate studies outside the meta-analysis, two elementary school principals independently documented the importance of physical elements of style. Stone (1992) and Andrews (1990) found that when students chewed gum, snacked, and/or moved around during class, global students' achievement increased.

The importance of the physical domain, especially sensory modalities, supports Lozonov's emphasis on active concerts, peripheral visual stimulation, and the use of visual, auditory, tactile, and kinesthetic instruction throughout the learning experience. Further, the Educational Testing Service (ETS) seems to be taking chronobiology seriously, because it recently announced the development of new computerized forms for the Graduate Record Examination (GRE) and the Scholastic Aptitude Test (SAT) that will be available to correspond to individual's preferred time of day (Callan, 1995).

Educational kinesiology, a quasi learning style approach, was developed by Paul Dennison (Dennison & Dennison, 1989), a remedial reading educator, to help children integrate both hemispheres of the brain for more effective processing. His series of simple physical brain-gym exercises reportedly strengthen left-to-right eye movements, binocular and peripheral vision, spatial awareness, visual discrimination, eye-hand coordination, auditory alertness, auditory receptivity, and clarity of thought. Dennison relied extensively upon neuroanatomy and brain functioning research to design the exercises, thus he also promotes the high consumption of drinking water, elimination of caffeine intake, and the reduction of refined sugar consumption. Few research reports exist, but

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those that do are impressive (Hannaford, 1995).

Environmental/Instructional Approaches to Learning Style. Environmental conditions such as bright versus dim lighting, sound versus quiet, formal versus informal furniture design, and warm versus cool classroom and study conditions have been found to effect learning. When students were allowed to work in environments consistent with their preferred environmental needs, they achieved at higher levels than when working in mismatched environments (Dunn & Dunn, 1993).

Unlike other style researchers who rely on formal identification instruments, Reid (1994) developed a structured teacher observation form to identify learning style preferences. He realized that valuable learning style data can be obtained through careful classroom observations of how students interact, communicate, move, organize themselves and their materials, attend, understand and succeed. He found that when teachers modified instruction in keeping with their observations of how children learn, student interest in instructional tasks increased.

By contrast, Bernice McCarthy (1987) developed the 4MAT System based primarily upon the integration of Kolb's (1983) Jungian-based "Learning Style Inventory" and research on brain hemisphericity. The result was a quadrilateral curriculum design with each quadrant divided into left brain/ right brain characteristics. McCarthy advocates designing lessons according to the eight step sequence that includes: a) creating an experience—right mode, 2) reflecting, analyzing experience—left mode, c) integrating reflective analysis into concepts—right mode, d) developing concepts, skills—left mode, e) practicing defined "givens" —left mode, f) practicing

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and adding something of oneself—right mode, g) analyzing application for relevance, usefulness—left mode, and h) doing it and applying to new, more complex experience—right mode. By following these steps, McCarthy believes each child's basic learning styles can be accommodated at least part of the time.

As noted earlier, Kathleen Butler (1984), a graduate student of Anthony Gregorc's, translated his theory and identification instrument into practical terms for teachers. She expanded Gregorc's four "mind styles" to show their overlap with Bloom's hierarchy of thinking skills. Similarly, Renzulli and Smith (1978) wanted an instrument that was directly teacher oriented, so they designed a questionnaire to assess learners' preferences for various types of learning experiences: projects, simulations and acting, drill and recitation, peer teaching, discussion, teaching games, independent study, programmed instruction, and teacher talk or lecture. Their results in the area of gifted education echoed that of other style-responsive research whereby more positive attitudes toward school resulted when preferences were matched.

Multiple Intelligences.

Some people confuse Gardner's (1985; Gardner announces the eighth intelligence, 1995) eight intelligences —musical, spatial, bodily-kinesthetic, mathematical/logical, interpersonal, intrapersonal, verbal/linguistic, or naturalist— with learning style, but there is a distinct difference. First, learning style is rather consistent across contexts. For example, if a person prefers soft furniture when studying, that preference does not alter contingent upon the task. By contrast, while sitting in an easy chair because of a preference for informal

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furniture design, the intelligence used will shift to match the task. That is, reading a mystery requires a different type of intelligence than does completing income tax forms or reviewing a musical score. Gardner (1985) recognized the "need to adapt . . . curricula as much as possible to the particular learning styles and strengths of students" (p. 79), but he made a clear distinction between intelligences and styles.

Summary of Learning Style Models

Each of the models discussed above tends to focus on one or two aspects of learning style except the Dunn and Dunn model which offers a comprehensive approach including major learning style elements in each of five domains. Of all models studied, the Dunns' approach has received more research attention in school settings than any of the other models, and it has generated research within 90 different institutions of higher education (Dunn, 1995). Based on the meta-analysis of experimental research findings discussed earlier: a) students with strong preferences made greatest academic gains when their preferences were addressed; b) college and adult learners responded with greater gains than elementary or secondary school learners when instruction was matched to their preferences, c) middle class students were more responsive to style-responsive accommodations than lower, lower/middle, or upper/middle class students, d) average students were more responsive to style-matched instruction than high, low, or mixed groups of students, e) studies of one year's duration showed greater student gains than shorter studies, f) mathematics was the most responsive to learning-style accommodation followed by other subjects and language arts (Dunn, et al., 1995).

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McCarthy's model has strong user appeal, but it has far less research to support its use than does the Dunns' model. McCarthy's 4MAT System appears simple and straight forward, however, Kolb's rich theoretical base upon which it was designed is highly complex and technical. Further, McCarthy's application of hemisphericity to Kolb's quadrants increases that complexity, thus, to fully comprehend McCarthy's eight step instructional design requires considerable study. Nonetheless, it offers a visual display that fosters experiential lesson planning and the use of all perceptual modalities. Consequently, it can support the inclusion of techniques in keeping with accelerative learning. Butler's interpretation of Gregorc's model provides a rich composite of instructional ideas and rationale, but availability of research to support her suggestions is virtually non existent. Nonetheless, her recommendations seem well-grounded in theory and best practice.

To build interest in a short amount of time, and to lay a foundation for moving to greater depth, I find Dellinger's psycho-geometric shapes a useful way to introduce the learning style concept. Primary children to adults of all ages relate to shapes; consequently, a playful introduction to style promotes rapid, superficial knowledge of style which can motivate learners to delve deeper into the study and understanding of how they learn.

Lynn Curry (1987) used an onion metaphor to describe the stability or entrenchment of particular learning style domains. She placed personality dimensions at the onion's core because they are the least resistant to change. In the middle strata she placed information processing dimensions since they influence and are influenced by personality dimensions. In the outer strata, she placed environmental/

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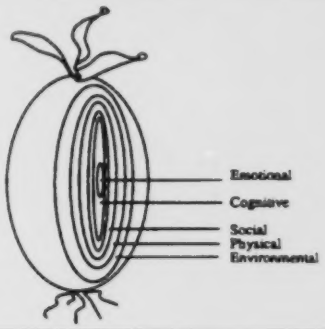
instructional factors, since they are most susceptible to change. Claxton and Murrell (1987) added social interaction between the two outer layers and Given (1995) included physical elements between social interactions and environmental/ instructional dimensions to make the metaphorical model more complete (Figure 3). The stratification theory

Figure 3. The Onion Model (Given, 1995).



is hierarchical which ignores the interactions among domains. Further, the onion metaphor fails to take into consideration the overlap among approaches. For example, because it is more comprehensive and more complete than most approaches, the Dunn and Dunn model is compatible with aspects of Jung's personality factors and is supportive of models in each of the categories.

When organized into a framework showing interactive influences across approaches, a rich model emerges that takes into consideration the processing complexity recognized by

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cognitive psychologists (Benjafield, 1990; Csikszentmihalyi, 1993; Jackendoff, 1994; Solo, 1995), neuroscientists (Dawkins, 1989; Edelman, 1992; Gazzaniga, 1988; Jones, 1993; Ornstein, 1991; Pert, 1993; Pribrim, 1978; Restak, 1994), physicists (Bohm, 1980; Capra, 1982; Crick, 1994; Gleick, 1987; Harth, 1993; Waldrop, 1992) and others (Bentov, 1977; Miller, 1993; Sylwester, 1995; Wheatley, 1992,1994) [figure 4]. This synthesized model compresses similarities across models into a unified framework with the Dunn and Dunn domains as the foundation. Three frames of reference are needed to understand this synthesized version: the interrelatedness of learning systems; the overlap between learning styles and personality types; and chaos and complexity theories.

Interrelatedness of Learning Systems

Systems theory suggests that all things are connected in some way, that what happens to one system, impacts other systems. This can be seen by dropping pebbles into a tub of water and watching the concentric circles bump into one another and form new interrelated patterns. It is also seen among systems of the body: Humans are composed of many individual systems and subsystems that interrelate with interdependence upon each other. Heart disease, for example, not only clogs blood vessels, it reduces physical stamina, weakens respiration, and creates emotional depression—spin off results in other systems. Learning systems—emotional, social, cognitive, physical, and environmental— seem to work in the same way. What impacts one 'bumps into' and effects the others (figure 4). When a person is emotionally or physically stressed, cognitive functioning is impaired as anyone

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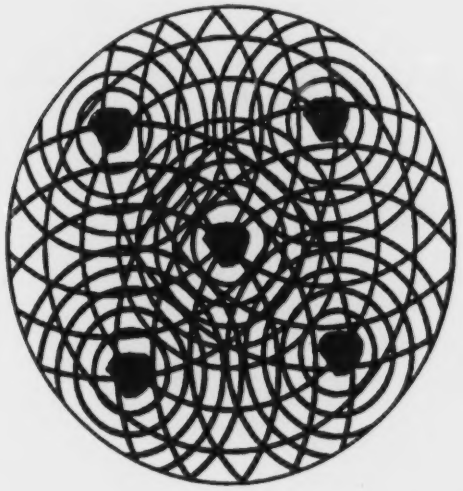
who ever experienced emotional pain can verify. By

Figure 4. Pebble interference pattern

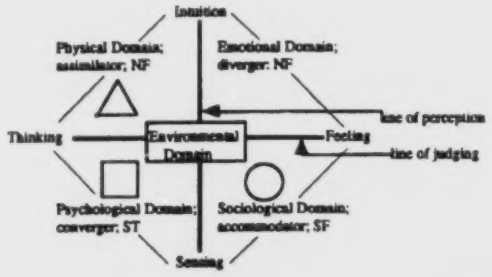


contrast when involved in a loving relationship, that glow is reflected physically in quickness of step, body posture, and facial expressions. No bodily system can work independent of the other systems and the body would perish without all its systems. This interdependence of learning systems also seems to exist, but among them the emotional learning system may be far more critical to the whole of learning then previously thought.

Overlap of Learning Styles and Personality Types

Dunn and Dunn's domains include factors associated with Jung's psychological types— at least in part (figure 5).

Figure 5. Synthesized Learning Styles Model



Note: Each of the personality types may be either introverted or extroverted or rely more on perceiving or judging, thus creating the sixteen Myers-Briggs personality types.

For example, the Dunns' associated motivation, persistence, and responsibility with the emotional domain. Jung's personality types most prone to emotional influences tend to be those identified with intuition and feeling (NF). They are equivalent to Dellinger's squiggle personality and Kolb's diverger. In all cases, it is the person's emotional being that fosters or inhibits cognitive learning.

The Dunns' sociological elements reflect an individual's preference for working alone or with others of the same age or those in authority. The sociological domain, therefore, overlaps

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Jung's sensing-feeling (SF) psychological type which reflects attention or lack thereof to body language, language intonations, voice nuances, and body actions. The sociological domain is more interested in how something is said and who says it rather than what is said. These sociological characteristics are associated with Kolb's accommodator style and Dellinger's circle especially when speaking about individuals who are viewed as "people persons" and team players.

Personality characteristics associated with sensing-thinking (ST) and Dellinger's boxes or squares are similar to the Dunns' analytic learners within their psychological domain. Sensing-thinking types and analytic styles appear most concerned with information input and the cognitive processing of that information. Characteristics include concern for details, rules, procedures and directions; a preference for specific, step-by-step directions and instructions; and frequent feedback or assessment on how they are doing. There is a heavy reliance on auditory learning with an emphasis on language spoken, heard and read.

By contrast, global students, those who are concerned with the end results, the "big picture," variety, alternatives, and general guidelines with freedom to create their own solutions are more in keeping with Jung's intuitive-feeling (NF) and sensing-feeling (SF) types, and Dellinger's squiggles and circles. For globals, the emotional domain and the visual modality appear to be dominant while for analytic learners information processing and the auditory modality appear dominant.

Jung's intuitive-thinking (NT) psychological types are similar to Dellinger's triangles, Kolb's assimilator style and Dunn and Dunn's active learners in their physiological domain.

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Characteristics include active learning, mobility, intuitive decision making and attention to physical nuances of learning such as food intake and tactile-kinesthetic learning. Dellinger calls persons whose physiological system is dominant "movers and shakers," because they are eager to move quickly toward their goals and they aren't afraid of making mistakes. She claims that persons with a dominant physiological style view as corrective feedback what others see as mistakes, errors or failures.

The Dunns' environmental domain is connected to all other domains because everything happens within an environmental context and is influenced by that context. This includes lighting, temperature, sound, furniture design, and other aspects of the physical setting. Because the environment is more transitory than the other domains, it overlaps with Dellinger's rectangular shape which suggests transition from one dominant personality type to another. The environmental domain has no equivalent in the Jung or Kolb models even though the environment provides information that shapes the manifestation of learning styles.

Readers are reminded that individuals with dominance in any one of these five major learning systems—emotional, sociological, psychological, physiological and environmental— can obtain energy either from within themselves (introverted) or from others (extroverted). Also, each can emphasize how information is perceived versus how it is judged. It is this combination of factors— domains, types, styles, shapes, dominance, perceptions, and judgments— that creates complexity in the learning style movement and that interferes with understanding learning styles as a viable construct.

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Chaos and Complexity Theory

If we turn back to the pebbles metaphor and visualize each of the pebbles as representative of a learning system within each of us, the complexity of learning styles is evident. In fact, learning as a process may appear chaotic with each of the learning systems vying for attention at any one time. Preferred learning styles define which of the systems we pay more attention to, which takes a dominant role in how we learn, and which are exercised minimally when we have a specific learning task before us. By the same token, personality types define our individuality as human beings; they play a critical role in determining how we are perceived by ourselves and others. They, like learning style preferences, are rather stable over time as well as across settings and content (Gardner, 1985; Keefe, 1987).

Learning preferences create a pattern of learning in much the same way concentric circles are created by dropped pebbles. In both cases, similar patterns are generated each time pebbles are dropped or a learning task is undertaken. However, like the tub that keeps the waves confined, we each have learning style parameters within which we operate. According to physics, these unseen parameters are called strange attractors. That is, we have certain ways of thinking, learning and behaving that fit our style. Operating outside those parameters by trying on someone else's style, does not feel as comfortable. Even so, our rather consistent patterns of learning do not repeat themselves in exactly the same way each time. Like repeatedly dropped pebbles, our patterns may appear the same, but since we change emotionally, physically, psychologically, and socially within an ever changing

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environment, second by second and minute by minute, our learning style patterns also change gradually or fractionally over time. In physics these similar but slightly different patterns are called fractal patterns. Thus, our preferred learning styles are like weather patterns that repeat themselves generally but not exactly. They are like leaves on a tree or snow flakes that look alike but upon close examination have definite differences. And as we look at a classroom of students each with a different learning style pattern, the combination of those differences may look chaotic and unmanageable in much the same way the interfering wave patterns created by the pebbles look chaotic until we look at the bigger picture and find the beautiful geometric configuration on the surface of the water created by the interaction of various wave patterns.

Principles of physics tell us that the more complex something is the greater the need for a simple model to explain it (Gleick, 1987). A simple, synthesized version of several learning models; therefore, is one way of allowing information about learning style models to inform and form us (Wheatley, 1992, 1994). A simple system is not only helpful, it is necessary in determining how to address individual learning styles within the same classroom so the orderliness in apparent chaos is permitted to show its true beauty.

Classroom Applications

There is controversy about whether teachers should use an instructional framework such as the 4MAT System for lesson planning and implementation or whether teachers should empower students to change their learning

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environments to match their individual learning style preferences as recommended by Dunn and Dunn. Perhaps both are appropriate. The framework presented in figure 5 can serve as a planning document for developing thematic units, as a format for designing daily lessons, as a visual aid for designing style-responsive instruction for individual students, and as a framework for helping students understand and create style-responsive environments.

When given the opportunity to design their learning space, students take more interest in demonstrating positive impact from that empowerment. The Dunns (1993) reported that secondary students learned to reorganize their classrooms within 45 seconds at the beginning and ending of each period. Accommodations such as clip on, battery powered, high intensity lights can be used for those who need brighter lighting than is available in the classroom. Bulbs can be removed in sections of the room to create an area that is dimly lit, and instrumental, classical music can be played quietly for those who need sound if the ordinary noise level within the school environment is insufficient. Ear plugs may help those who need quiet.

Next, teachers could introduce a thematic unit or lesson through a story, metaphor, humorous incident or joke that directly relates to the content. Recounting episodic events addresses the global learners' need for emotional and personal relevance, because stories make issues and problems concrete, visual, and relevant (Dunn and Dunn, 1992, p. 106). If the story or metaphor is followed by explanations of assignments, procedures and approaches for reaching specific lesson objectives, then analytic learners can find comfort in becoming involved. If this part of the lesson is kept relatively short, the attention of global learners can be sustained. Teaching students

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how to set unit and/or lesson goals for themselves and then relating the goals to daily work can also empower them to be responsible learners (Given, 1994).

To maintain the momentum for learning generated by an emotionally relevant introduction or review, the teacher can provide alternative ways for students to construct their own knowledge socially through collaborative learning opportunities where students learn with and from each other, from individual study and projects, or from teacher led instruction. When given opportunities for gaining the same information in alternative ways, students can take charge of their learning, because if they don't, that privilege is taken away from them. Dunn and Dunn (1992) recommend techniques such as Circle of Knowledge, Team Learning, Brainstorming, Case Study, and Simulation as structures for small group learning without constant teacher direction. Also, several well-researched cooperative learning models address the sociological domain while focusing on content (Aaronson, Blaney, Stephan, Sikes, & Snapp, 1978; Johnson & Johnson, 1975; Kagen, 1992; Slavin, 1986); thus the teacher can provide student options for working with others or alone unless the lesson is designed to teach specific interactive or independent skills in which case, the option would be withheld.

The psychological domain or information processing approach focuses on what content, concepts, skills, strategies and principles are to be learned. Teacher and student planning, strategies instruction and skill building are key elements associated with information processing. Thus, teacher clarity about expectations and student development and maintenance of a well-organized notebook of materials are critical. Organized work can later be used in the students' portfolio as evidence of their growth as learners. Focus on the

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psychological domain is to focus on clear instructional objectives and plans for reaching those objectives.

The physiological domain calls for active learning and the development of products such as writing stories, building dioramas, making posters, scripting puppet plays, making learning games and so forth. As with content development, active learning may be individual, enjoyed with a partner or a small group, or done in conjunction with an adult. The important thing is that students use their hands and/or bodies in an active way for the construction or practice of new knowledge. The Dunns recommend electroboards, flip chutes, floor games, and other manipulative materials that engage students motorically.

This brings us back to the environmental domain which is a good place to reflect on how well things are going in the particular environment under whatever specific circumstances exist. Frequent assessment of new learning is strongly recommended to satisfy the need analytic learners have for frequent feedback and to keep global learners sufficiently focused on the learning task. On-going, authentic assessments rather than tests that require memorization and regurgitation are recommended. For example, students could be asked to describe what they learned and how they will use that information. They could be asked to give evidence of their learning and to reflect on it by describing what they would do differently the next time or what they particularly liked about their efforts. Consequently, the framework in figure 5 can serve as a structure to guide teacher planning for the whole while addressing the learning styles of individual learners as recommended by Dunn and Dunn (1992 & 1993).

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Article Summary

In this paper, I presented an overview of five categories of learning style approaches or models. I then identified the Dunn and Dunn model as the most comprehensive and best researched. The Dunns' five learning domains were presented as interrelated learning systems which vie for attention and create patterns of learning preferences called individual learning styles. Strange attractors and fractal patterns were introduced to demonstrate how learning is similar to physical world phenomenon such as wave and weather patterns. The overlap of model similarities provided a framework for general lesson planning and style-responsive instruction for individuals.

In conclusion, research clearly demonstrates that teaching that honors learning style preferences can build high levels of comfort and ownership of the learning process which, in turn, can produce positive learning states and subsequent academic achievement. Clearly, teaching that matches individual learning style preferences enhances academic attainment, is supported by principles of accelerative learning and can be implemented in incremental steps as appropriate for the individual teacher. Thus, alternative teaching procedures based on learning style instruction should receive deep consideration by all teachers.

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Using Learning Styles in Education: Research and Problems

David Lemire

Abstract. Previous research has shown that the concept of learning styles was unreliable. The author's research using his improved instrument shows that the concept can be measured reliably and validly.

* * * * * * * * *

Learning styles appears to be an educationally popular concept. In fact, Keefe (1991) suggests that, "Learning styles is the foundation of successful teaching and teaching for thinking" (p. 1). Indeed, elements of learning style appeared in the research literature as early as 1892. "Most of the early research (before 1940) was concerned with the relationship between memory and oral or visual teaching methods. The findings were conflicting, no doubt due in large part to the differences in the populations, learning materials, and test instrumentation that were utilized" (Keefe, p. 6). There continues to be a debate over the definition and the validity

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of the learning styles concept. Learning styles or modality has been described by Barbe and Milone (1989): "All children do not learn the same way. They rely on different sensory modes to help them. Some depend heavily on their sense of sight, others on their sense of hearing, and still others on their sense of touch. The mode they use influences their classroom behavior and achievement ... 11 (p. 237). For school psychologists and educators who are interested in this topic there are three major sources that should be examined. The first source is the NEA booklet on learning styles by Reiff (1992). The second source is an article by Dunn, Beaudry and Klavas (1989) which is a survey of the research on learning styles. The third is an article entitled, "A Critique of the Research on Learning Styles," by Curry (1990). Curry (1990) noted three major problems facing the learning style concept: (1) confusion in definitions, (2) weakness in reliability and validity, and (3) the identification of relevant characters in instructional settings. The present article proposes to take the reader through each of these issues and make specific suggestions for the school psychologist who may want to utilize the learning styles concept in assessment or general educational practice.

Confusion in Definitions

The term "learning style" is too generic a term to be useful to the practitioner. For example, Reiff (1992) has identified 32 elements of learning style that encompass cognitive, affective and physiological components. Many of these components, however, can be organized into three general areas of style with which the practitioner should be familiar. The first element is learning style or modality, which refers to the way information goes into the brain; second, cognitive style, which

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refers to the way information in processed in the brain once is gets there; and finally personality style, which refers to the dominant and minor characteristics of the individual that express themselves in general ways through the overall personality. There are also "teaching styles" which can be thought of as the inverse of cognitive and learning styles.

For example, learning style or modality should be confined to the model which allows for visual, auditory and haptic preferences. Cognitive style should be confined to left brain/ right brain issues or field dependence/field independence issues. Lastly, personality style should be confined to such measures as the Myers-Briggs model (Jungian in origin) or Lemire's *Ego Inventory* (1987).

(2) Weaknesses In Validity and Reliability of Measures

A second major problem with the learning styles concept is the lack of scientific evidence supporting this idea. For example, in a recent review of Buro's *Eleventh Mental Measurement Yearbook* (1992), this author found only four learning styles instruments included, from among the 60 to 70 instruments that are available. Typical comments by reviewers of the instruments were as follows: "The LCPC *(Learning Channel Preference CheckList)* manual does not provide evidence to support the claims of the author .... The use of three learning styles by the LCPC implies that these are the only learning styles used by individuals. .... The many shortcomings of the LCPC and manual preclude consideration of its use. No research is referenced to support the claims of the author and no ... evidence of the psychometric properties of the scores is provided" (p. 455).

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In reviewing the *Learning Preference Inventory* the evaluator states, "The fundamental problem with the *Learning Preference Inventory* is the lack of technical information documented in materials available to users. Basic information is missing about its reliability, its validity in classifying student learning preferences, and its usefulness for increasing teaching effectiveness" (p. 456). In an evaluation of the *Learning Process Questionnaire* the reviewer concludes, "More work needs to be done before these instruments can be highly recommended for use in counseling individual students ... 11 (p. 458). In a review of the well-known *Learning Style Inventory,* the examiner concludes, "Research and test development in the field of individual learning styles has been plagued by poor attention to issues of construct validity and theoretical development. The authors of the *Learning Style Inventory* (LSI) have not improved upon this state of affairs. Rather, their instrument exemplifies all of the problems characteristic of instruments designed to measure learning styles" (p. 460).

Finally, in a review of an instrument entitled, *Learning Styles and Strategies* (Buros, p. 462) the examiner concludes: "Not a single shred of evidence concerning the reliability and validity of either the Learning Style or the Teaching Style inventories appears in the manual. Nor is there presented any evidence of validity supporting the Jungian personality theory upon which the two inventories are based" (p. 463).

So should practitioners throw out the entire notion of learning styles? Not just yet. The authors' own validity and reliability research (Lemire, 1995) indicates that there is stability in the concept of learning styles. For example, in a test of 77 college students in Kansas, four learning styles instruments were given to each student. The author found that about 75% of the time there was congruence between the scores. Much more validity

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and reliability research needs to be completed before we put too much faith in any given learning style assessment.

(3) Identification of Relevant Characteristics In Learners and Instructional Settings

The concept of learning styles is a type of aptitude-treatment interaction. According to Snider (1990), "Aptitude-treatment interactions suggest that a person's distinctive characteristics or aptitudes (in this case, learning style) can be matched to a specific treatment (instructional method) ... resulting in a statistical interaction (a more effective outcome than could otherwise be achieved). But numerous reviews of the literature have failed to find support for aptitude-treatment interactions. They have not been supported by research in educational psychology (Berlinger and Cahen, 1973; Cronbach and Snow, 1977; Miller, 1981) or in special education (Kampwrith and Bates, 1980; Kavale and Forness, 1987; Tarver and Dawson, 1978; Ysseldyke, 1973)" (p. 53).

In a more recent discussion of aptitude-treatment interaction by Andrews and Naglieri (1994) the authors stated: "Historically, many special educators have utilized the concept of aptitude-treatment interactions (ATI) as a way of improving instruction for those children experiencing academic difficulties in the classroom .... Despite a considerable amount of effort, research on aptitude-treatment interaction has not yielded positive results. It is our contention that the lack of positive findings does not mean that the ATI concept is invalid, but that attempts to operationalize the concept have not been based on adequate theories of assessment for instructional planning" (p. 8).

Speece (1990) concluded, "...the usefulness of the ATI

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paradigm with respect to individual differences may not be as grim as we have been led to believe. Critics of ATI appear to outnumber proponents in the literature and are certainly provided with ample ammunition to dismember the A, the T, or the I from the acronym depending on the particular perspective. Proponents usually acknowledge the difficulties but remain undaunted by the magnitude of the task.

In a 1992 article on aptitude theory by Snow, the author concluded: "Cronbach (1957) had recognized that yesterday's aptitude research was limited to demonstrations of test-retest and test-criterion correlations that ignored situational variations, just as experimental research on instructional situations had ignored aptitude variations; the two approaches had to be united in the study of ATI if a new aptitude theory was to be reached" (p. 11). Further, Snow stated, "The history and details of ATI research since then have been reviewed elsewhere (Cronbach, 1975; Cronbach & Snow, 1977; Snow, 1977b, 1989a), but the major conclusions we published in 1977 still hold: They can be summarized briefly in five points: (a) ATI are ubiquitous in education. (b) Measures of general ability do indeed reflect an important aspect of aptitude and show many ATI but interact especially when one treatment can be characterized as highly structured, complete, and direct and another can be characterized as relatively unstructured, incomplete and indirect. (c) Measures of specialized abilities show relatively few ATI, but there are notable exceptions. (d) Measures of conative and affective aptitudes enter an enormous variety of ATI patterns, including some that identify the same treatment dimension of structure and completeness that enters cognitive ATI. (e) The ubiquitous complexity of ATI makes conventional hypothesis-testing methodologies inadequate, not only for ATI research, but for educational psychology in general', (p. 11).

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Earlier Research

The author has been studying and researching learning styles for the last ten years. Over that period of time some descriptive data has been assembled regarding the percentages of learning style preferences for different groups. This information is presented below:

In 1987 the author gave the *Student Learning and Interpreting Inventory* (SLIMI) to 27 college students at the University of Wyoming. 63% of these students exhibited a clear preference for one of the three basic kinds of learning styles. 15% exhibited a preference for two of the modalities. Finally, 22% of these students indicated no clear preference for any of the three basic kinds of learning styles (visual, auditory, haptic). In addition, 52% of the students showed a preference for the visual modality; 17% showed a preference for the auditory modality, and 31% showed a preference for the haptic or kinesthetic-tactile modality.

In 1990, the author gave the SLIMI to 152 eighth graders at a middle school in rural Wyoming. Of these students, 36% showed a clear preference for the visual modality; 16% showed a preference for the auditory modality; and 32% showed a preference for the haptic modality. Of these 152 students 13% showed a mixed preference.

In 1987, the author gave the SLIMI to 142 seventh graders at a middle school in rural Wyoming. 63% of these students indicated a preference for the visual modality, 31% showed a preference for the auditory modality, and 27% showed a preference for the haptic modality. 34% of the students showed a preference for two learning styles and 17% indicated no clear preference.

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More recently, in the spring of 1995, the author gave the SLIMI to a large group of 4th, 5th, 6th and 7th graders in two schools in Topeka, Kansas. The total number of 4th graders was 46 (28 males, 18 females). Of these students, 37% indicated a visual preference, 30% indicated an auditory preference, and 41% indicated a haptic preference. Of fifty 5th graders tested (25 males, 25 females) 30% indicated a visual preference, 32% indicated an auditory preference, and 42% indicated a haptic preference.

One of the important indications found in this research is the apparent shift of learning styles from childhood to adulthood. Children appear to be balanced in their learning orientation with about 1/3 being visual, about 1/3 being auditory, and about 1/3 being haptic. The author gave the *Learning and Interpreting Modality Instrument* (LTMT) to a large group of adult students (n=77). These students were given a total of four instruments, all designed to measure the same learning style preference. Of these students there was about 75% congruence between the different instruments (if they scored high on one, they scored high on the other instruments). These students were asked how they saw their own learning styles. About 60% of the time their self-perception matched the results of the tests that were given. of these 77 students, 75% were visual, 6%. were auditory and 18% were haptic.

In a different assessment, the author gave the *Swassinq Barbe Modality Index* to a group of 33 adult college students in the spring of 1995. These results were consistent with those of Stensrud and Stensrud (1983) who studied a group of teachers and found that 84% had a preferred visual style, l0% had a preferred auditory style, and 25% had a preferred haptic style.

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Reliability

In the spring of 1995 the reliability of the LIMI was calculated for both test-retest and split-half. These reliabilities are reported below:

	Group 1	Group 2
Visual	.76	.78
Auditory	.71	.68
Haptic	.77	.76

The corrected Spearman-Brown reliabilities for the three subscales are reported below:

	Group 1	Group 2
Visual	.40	.39
Auditory	.15	.39
Haptic	.31	.44

The Standard Error of Measurement for Group 1 was V = 2.38, A = 1.74, and H = 2.22. The Standard Error of Difference at .05 was V = 3.98, A = 4.21, and H = 3.90

Implications

(1) Based upon the research of this author, learning styles assessments are acceptably valid and acceptably reliable. In the case of an immature or unstable personality, additional assessment should be given in order to confirm the stability of the tendencies.

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(2) Educators should be suspicious of outlandish claims made by the promoters of the many learning styles assessments which are scientifically unsubstantiated.

(3) Educators should do their own action research in the area of learning styles, developing normative data, validity and reliability evidence.

4) Educators should be familiar with additional instructional considerations important in the discussion of learning styles of which there are five: match, adaptability, versatility, interaction and stretch. See Appendix A.

(5) There are nine implications for learning styles which have been summarized from Lemire's research:

(a) It appears that only about: one-third of young people have a single dominant learning style, one-third have two, one-third have no clear preference. In instruction, it would be wise to follow the old educational psychology adage: Show, Tell, Do.

(b) Adult Caucasians who have a preference appear to be visual learners. This fact has important implications for secondary and college teaching, where lecturing dominates instruction. Lecturing is not a very effective methodology.

(c) The lecturers need to reorient toward more effective and appropriate teaching methodologies such as graphic organizers or anticipation guides. For example, instead of lecturing, they should probably spend their time helping students make sense of complicated expensive textbooks.

(d) The relationship of learning styles to cognitive styles to personality styles is random, not linear. This fact is probably why there is such an issue of aptitude-treatment interaction with the learning styles concept. The concept of learning styles is studied little in a scientific sense. These nonlinear

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relationships need to be studied in much greater depth and detail than has been the case.

(e) There are many other factors which influence achievement besides learning style, task orientation and hard work among them. Teachers can apply all this style information perfectly and children will not learn if they choose not to, and many choose not to. A parent or teacher can fairly ask why should a student work hard? There is no reason to work hard in the present structure of the American public school system. Social promotion is the norm, not the exception.

(f) The lecturers need to remember that the purpose of instruction is to teach, not to hear themselves talk. Teachers should probably be required to take more than one educational psychology course in each of their undergraduate and graduate programs.

(g) LS information is probably misused in groups. LS style information may be helpful in the case of weak learners, where specific correctives and instructional match are necessary to optimize performance, or exceptional learners, who may be able to handle more complex and difficult material and situations.

(h) Public school students should probably be taught specifically about how they learn and how they learn best. Classes should be structured so that the first couple of days is spent on learning how to learn. Following this initial period, teachers and students can then concentrate on the appropriate subject matter.

(i) Every individual assessment should contain an assessment learning style and affective orientation. The problem seems to be the lack of scientifically credible validity and reliability data on the many instruments that are available. There is not

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even any accurate descriptive information on the groups of learning styles we can identify. For example, are there differences between males and females? Between whites and minorities? Between the different grades and ages? What is "normal" for a 4th grader? For a 7th grader? For a 12th grader? There is a good deal of work to do in this area.

Conclusion

The purpose of this article has been to describe the concept of learning styles and problems which are associated with this concept. There are three major problems with learning styles according to Curry (1990); (1) confusion in definitions, (2) weakness in reliability and validity, and (3) the identification of relevant characteristics in learners and instructional settings. The author discussed some of his own descriptive research in the area of learning styles over a period going back about 10 years. There are a number of implications of the learning styles research for educators which are described by the author.

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Appendix A

(a) MATCH. When grouping for instruction the more style match the better. That is, be cognizant of teacher style and student style or cognizant student style and personality student style. The closer the style match the more the learners will have in common. For example, concrete sequentials who teach other concrete sequentials' personalities.

(b) ADAPTABILITY. The more adaptability the better. That is, the more an individual is not afraid of other styles and is willing to adapt to other styles, the better. For example, the concrete sequential who will choose to learn from an abstract random may have difficulty.

(c) VERSATILITY. Versatility is the fluid ability to shift from one style into others. Versatility is a critical skill that should be taught deliberately along with general style information. For example, a self-sufficient personality who can think like a loyal personality.

(d) INTERACTION. No one thing determines behavior. What normally determines behavior for most people is an interaction of influences that result in some kind of decision. So the different style models do not overlap, though they do interact to result in behavior. Behavior is not determined by outside forces though it is shaped by outside forces.

(e) STRETCH. The more stretch the better. All students should experience learning in a non-dominant style area, that is, randoms should have to experience sequentialness. The sequentials should have to experience randomness; it is not wise to teach only in a strength area. How will students learn

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to appreciate other styles if they are only taught in their dominant styles? Generally speaking, since half the world is sequentials and half are randoms then a rule of thumb is half of a teacher's instructional time should be spent in sequential instruction and half in random instruction.

*** *** ***

Resumen. Previas investigaciones han mostrado que el concepto de estilos de aprendizaje fue inseguro. La investigacion actual usando un instrumento mejorado muestra que este concepto puede medirse seguramente y validamente.

For further informaiton contact the author: David Lemire, ED.S., NCSP, P.O. Box 21097, Topeka, KS 66621. 913 233 8229

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Teaching Students Through Their Culturally Specific Learning Styles

Daya Singh Sandhu
University of Louisville

Lina Yuk-Shui Fong
East Tennessee State University

John R. Rigney
Lindsey Wilson College

Abstract This article is a general overview of the significance of culturally specific learning styles. The impact of culture and child rearing practices on the development of learning styles is discussed. The findings of some research studies comparing learning styles of students from diverse ethnic groups are presented. Several suggestions are made for teachers to accelerate the academic achievement of their students. Teachers are urged to adopt pedagogical strategies that include individualized teaming styles that are unique to the ethnic and culture background of their students.

Teaching Students Through Their Culturally Specific Learning Styles

A concern about effective teaching and learning dates back to the days of Greek philosophers such as Socrates, Plato and Aristotle. Traditionally, if a student fails to learn, s/he is held responsible for the failure. Different reasons are given. A failing student could be unmotivated, lazy, and in some cases even considered "learning disabled." On the other hand, it is interesting to note that we have paid very little attention to the "teaching disability" of some teachers.

To enhance the efficacy of teaching, a new theory of learning styles has emerged. This theory postulates that students taught in their specific learning styles learn with ease, master the subject matter quickly, and retain the studied materials for a longer period of time (Dunn & Dunn, 1992; Hale-Benson, 1986; Lemmon, 1985; Reiff, 1992).

Historical Perspectives:

An overview of learning styles literature, reveals a confusing array of classifications, concepts, and confusing terms often used interchangeably. For this reason, we feel that a short historical overview with definitions is important.

a. **Cultural Styles**

Ramirez and Castaneda (1974) maintain that based on their cultural styles, all cultures, communities, and families can be divided into two major dimensions-traditional and modern. According to Ramirez (1991), persons attributing to traditional life styles tend to maintain close ties with the community and the family for the whole life. On the contrary,

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the people subscribing to the modern life style are generally inclined to separate from their families and communities in the earliest possible part of their lives. To contrast various differences between traditional and modern orientations to life, proposed by Ramirez (1991), we have prepared the following table:

Table I

A Comparison of Cultural Style in Traditional and Modern Environments

Domains	Traditional Environment	Modern Environments
1. Gender roles	Distinct and defined	Flexible boundaries
2. Identity	Strong family identity	Strong individual identy
3. Sense of belonging	Strong sense of individuality	Greater emphasis upon community
4. Loyalities	Strong family loyalty	Individual loylaty is more valued
5. Time orientations	Past and present time orientation	More oriented toward future
6. Age status	increasing age means increasing wisdom	Vitality of youth is valued
7. Significance of traditions	Traditional ceremonies are valued	Traditions are viewed as barriers to progress

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8. Norms and conventions	Respect for conventions and the authority	Encouraged to question authority
9. Role of religion and spirituality	Emphasize spirituality in life events	Emphasis on science and secularism

Note: From Psychotherapy and Counseling with Minorities: A Cognitive Approach to Individual and Cultural Differences (pp. 17-18), by M. Ramirez, 1991, New York: Pergamon Press. Copyright Pergamon Press. Adapted with permission.

Suggestion for Teachers:

There is a general consensus in the literature that students from Euro-American cultures primarily subscribe to the values listed under "modern environments" while people from other cultures mostly practice the values and priorities of "traditional environments".

This distinction is important for teachers to understand the value system, world views, and behaviors of their students in the context of their specific cultural backgrounds.

Examples: 1. A student from a "traditional environment" may not take much interest in a subject that prepares one for a profession which is generally dominated by members of the other sex.

2. A student coming from a "traditional environment" may never question the teacher, because she has been taught to be subservient to authority.

Suggestions for Teachers

1. Understand the cultural style of the students.

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2. Use a pro-active approach to reach out purposefully to those students whose values and needs differ from the mainstream.

3. Exhort the message that to be different means to be distinct but not inferior.

4. Accommodate the students with differing needs and priorities by changing the system, but not forcing them to change.

b. **Cognitive Styles**:
According to Messick and Associates (1976), Each individual has preferred ways of organizing all that he sees and remembers and thinks about. Consistent individual differences in these ways of organizing and processing information and experience have come to be called cognitive styles. (pp. 4-5).

Identification of Cognitive Styles:

The origin of cognitive styles can be indirectly attributed to the classical experiments performed by Witkin, Moore, Goodenough, and Cox (1977) through the body-adjustment test (BAT) and the rod-and-frame test (RFT). The researchers concluded that basically there are two main types of individuals: field independent and field dependent. Field independent persons approach the environment analytically while field dependent individuals tend to experience events globally (Messick and Associates, 1976). Identification of field independent and field dependent individuals is much more simplified through the use of a simple embedded figures test. In this test, the subject is asked to identify a simple figure in a more complex pattern. The field independent person can easily identify the given figure while the field dependent individual

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fails to do so. Anderson (1988) compared characteristics of field independent and field dependent individuals in context of school tasks and environments as shown Table 2.

TABLE 2

Cognitive Style Comparison

	Field-Dependent Relational/Holist Affective	Field-Independent Analytic Non-Affective
Characteristics		
1.	Perceive elements as a part of a total picture	1. Perceive elements as discrete from their background
2.	Do best on analytic tasks.	2. Do best on verbal tasks.
3.	Learn material that is inanimate and impersonal more easily	3. Learn material which has a human social content and which is characterized by fantasy and humor.
4.	Performance not greatly affected by the opinions of others	4. Performance influenced by authorizing figure's expression of confidence or doubt.
5.	Style matches up with mostschool environments	5. Style conflicts with traditional school environment

Note: From "Cognitive Styles and Multicultural Populations," by J.A. Anderson, 1988, Journal of Teacher Education, 39 (I), p. 7. Copyright1988 by Sage Publications. Reprinted with permission.

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Impact of Culture on the Development of Cognitive Styles

Child rearing practices within different cultures and ethnic groups have a direct impact on children becoming a field dependent or a field independent. Witkin and Goodenough (1981) state succinctly:

> Child rearing practices that encourage separate autonomous functioning foster the development of differentiation, in general, and more particularly, of a field independent cognitive style. In contrast, child rearing practices that encourage continued reliance on parental authority are likely to make for (sic) less differentiation and a more field-dependent cognitive style. (pp. 81-82)

There seems to be a general agreement in professional literature that minorities in America typically exhibit characteristics of field-dependence (Anderson, 1988; Cohen, 1969; Messick & Associates, 1976; Ramirez, 1973; Witkin & Berry, 1975). Several authors argue that most American schools reflect a field independent style which is not attuned to the world views and field-dependent style of minority populations (Anderson, 1988; Bennett, 1990; Cohen, 1969; Hale-Benson, 1986).

Suggestions for Teachers:

Teachers are urged to recognize field-dependent and field-independent students and take their special needs into consideration before designing and implementing curriculum and teaching strategies. Teachers may find observation guidelines developed by Castaneda and Gray (1974) useful to impart instruction which is responsive to the specific learning

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styles of their students.
Examples: For field-dependent students, teachers should tailor instructional activities which permit them to work together in a group. It may require transformation in curricula to shift from competitive learning to cooperative learning (Spady, 1988). On the other hand, field independent students should be given the opportunity to compete with others for individual recognition. Teachers should intentionally display more expressions of warmth and acceptance.

c. **Learning Style**
Keefe (1979) contends that "learning styles are characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (p.4).

It is important to note that learning styles are different from the cognitive styles in that a learning style is a broader term that includes affective styles and physiological styles in addition to cognitive styles (Keefe, 1979). Simply stated, cognitive styles are the preferred ways how information is processed, while learning styles are the preferred conditions under which the information is received. If cognitive styles are placed under the rubric of nature, learning styles can be placed under the rubric of nurture. However, in their most recent definition of learning styles Dunn and Dunn (1992) have apparently combined both nature and nurture stating that "Learning style is a biological and a developmental set of personal characteristics that make the identical instruction effective for some students and ineffective for others" (p.4),

Impact of a Culture on Learning Styles:
After an extensive review of literature, Worthley (1987)

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summarized following five cultural factors from various sources that influence the learning styles:

1. Socialization process: The more parents exercise control over their children, the more field dependent the children become.

2. Sociocultural tightness: The less pressure is placed on people to conform to the social customs, the more field independent they become.

3. Ecological adaptation: Perceptual skills are developed in people according to the degree they use their particular sensory modalities. For example, in the society where keen observation of the environment is necessary for survival, most of the people become visual.

4. Biological Effect: Dawson (1967) argues that biological factors also contribute to the development of specific cognitive styles. His study concluded that the children who lack protein tend to become field dependent.

5. Effect of language: The visual nature of written languages used in most modern literate societies influences the people to become more visual. The people who are not literate or belong to the societies where communication takes place orally, are less visual but more auditory.

Identification of Individual Learning Styles:

The seventies and eighties have witnessed a mushroom growth of instruments designed to assess the learning styles of various age group students. Cornett (1983) prepared an informative annotated bibliography of 30 instruments which measure

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affective styles, perceptual modality, cognitive style, and multidimensional factors. Readers are urged to review these instruments and select those which may serve their purpose best. Since it is beyond the scope of this paper to discuss the properties of all these instruments, only one instrument is discussed below.

The Learning Style Inventory (LSI) by Dunn, Dunn, and Price (1986)

The Learning Style Inventory (LSI), a inventory is one of the most widely used learning style instruments for elementary and secondary school populations (Bennett, 1990; multidimensional & Dunn, 1989; Keefe, 1979; Reiff, 1992). Since the LSI is a comprehensive instrument, it has a distinct advantage over other bipolar instruments which measure fewer elements of one's learning style (DeBello, 1990). It has commendable validity and reliability when compared with nine other available instruments of its kind (Curry, 1987).

The LSI has 104 dichotomous items, a sort of self-report questionnaire which take approximately 30 to 40 minutes to complete (Dunn & Dunn, 1992). The answers may be scored and analyzed either by hand or by computer. The LSI computer program generates individual profiles and group summary data. Reiff (1992) cited several domains under which learning elements are classified as,

> Environmental stimuli: (sound, light, temperature, design);
>
> Emotional stimuli: (motivation, persistence, responsibility, structure);
>
> Sociological stimuli: (peers, self, pair, team, adult, varied);
>
> Physical stimuli: (perception, intake, time, and mobility) (p. 26)

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Another stimuli, called psychological, identifies additional elements listed as global, analytic, hemisphericity, impulsive and reflective. In its most recent version, LSI measures 21 elements.

Significance of learning Style:

Several researchers report that academic achievement is enhanced and attitudes are improved when teaching styles are matched with the learning styles of the students (Dunn & Dunn, 1987; Dunn, 1988; Dunn, Beaudry, & Klavas, 1989; Dunn & Bruno, 1985); Lemmon, 1985). The Learning Styles Network (1993) has published an annotated references list of a large body of research which suggests that students learn more easily, learn better, achieve more, and remember things for a longer period of time if they are taught through their individual learning styles.

Could Learning Styles Be Culturally Specific:

Theoretically speaking, the answer is "yes". Since most learning style elements are developed through experience, all cultural factors, compiled by Worthley (1987) and discussed above should influence the formation of one's learning style. The rationale behind this premise is the notion that different ethnic groups have different socialization practices and undergo different ecological adaptations. Even the biological factor relating to protein intake may influence the various ethnic groups differently. "The notion that certain learning styles are related to certain ethnic groups is both dangerous and promising" (Bennett, 1990, p. 139), It is promising as it gives hope for strengthening the academic achievement of culturally diverse students by teaching them in their preferred modalities and making learning environments more conducive. However, there is a major concern that this notion may also create some stereotypes for ethnic groups. Teachers must be aware of this

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problem of labeling and remember that there are as many within group differences as between group differences among various ethnic groups.

Culturally Specific Learning Styles: Some Research Studies:
There is a critical shortage of empirical studies in this area. A few studies conducted to compare learning styles of different ethnic groups seem to suggest that there are differences and they do matter if we are to provide responsive instruction. For example, Griggs & Dunn (1989) administered the LSI to 4,562 students in 40 schools nationwide and found that:

1. Sequential processing skills: Whites scored higher than blacks

2. Verbal spatial preference: Blacks scored higher than whites

3. Pattern recognition: Whites scored higher than blacks

4. Visual perceptual preference: Asian Americans scored higher than blacks

5. Auditory- Blacks scored higher than others.

(P. 148).

*For brevity's sake, only the first five out of 18 significant elements are quoted here.

A Summary of Other Research Findings:
Dunn, R., Gemake, Jalali, & Zenhausern (1990) found significant differences between African Americans and Chinese Americans on 15 scales out of 21 scales of the LSI.

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Jalali (1989) reported that African American children have significantly higher preference for kinesthetic modality than Greek American children. Significant differences were reported between the learning styles of Asian Americans and European Americans in a study conducted by Lam-Phoon(1987). Sims(1988) reported significant learning styles differences between African Americans and European Americans. For example African Americans preferred sound, warmth, less structure, informal seating design, etc., more than the Euro-Americans. Similarly, Sandhu (I 99 1) reported significant differences in learning styles of four ethnically diverse groups from South Louisiana. The following profiles were prepared after administering the LSI to 35 Acadian American (Cajuns), 20 African American, 20 European-American, and 21 Native American (Houma Indians) adolescents:

1. Acadian Americans (Cajuns):

Are usually non conforming; they do not like to do something because someone asks them to. They prefer late afternoon as their best time for studies. They like frequent breaks and prefer mobility in their task.

2. African Americans:

African Americans work better under very bright light. They prefer specific directions/ explanations before starting or completing a task. African Americans seem to feel more comfortable when someone with authority or special knowledge is present. They can learn best when initially listening to a verbal instruction such as a lecture, discussion, or routine. They are also highly tactile who feel a strong need to keep their hands busy when they are thinking hard. Since they are highly kinesthetic, they require whole body

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movement and/ or real life experiences to absorb and retain material to be learned. They want to achieve to please their parents or a parent figure.

3. European Americans

Prefer to study with peers through discussions and interactions. They may easily learn alone. They need variety as opposed to routines. Their primary perceptual strength is visual. They can easily recall what has been read or observed. They often eat, drink, chew, or bite objects while concentrating. They prefer evening as the best time for study.

4. Native Americans (Houma Indians)

Prefer surroundings that are quiet, warm, and informal. Once a task is begun, they are persistent to complete it, without taking any breaks. This group prefers late morning as their time for studies.

(Sandhu, 1991, p. 27)

Suggestions for Teachers:

Teaching that is responsive to individual learning styles warrants re-examination of teaching styles. Teachers have a tendency to teach according to their own learning style modalities. After a number of years, traditional teaching still continues which consists of the following typical elements (Marshall, 1991):

* students in row
* quiet learning environment
* formal classroom design
* teacher dominance
* whole-group instruction
* textbook/lecture format

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* learning by looking/ listening
* low/no mobility
* paper and pencil emphasis

(p. 225)

In order to personalize instruction, it is imperative that teaching and learning processes are restructured. In this effort all students, especially culturally different students, should be empowered through their specific learning styles to help them achieve academic equity. Dunn and Dunn (1987) have tried to dispel outmoded beliefs about student learning which we think are very important for the readers to challenge traditional teaching and re-structure their classroom environment and teaching styles.

For example, briefly stating Dunn and Dunn (1987) contend that students don't necessarily learn better if they are:

* seated upright at a desk
* placed in an absolute quiet environment
* studying in well-illuminated area
* sitting still
* participating in a whole-group instruction
* self-motivated

Practical Guidelines:

After reviewing each student's profile, teachers and administrators should improvise and implement several strategies which are necessary to meet each student's special learning needs. Some of these strategies, as suggested by Dunn and Dunn (1992), include

1. Redesigning Classrooms into Multi-instructional Areas:

Redesigning of classrooms can be useful to accommodate the learning preferences of students taking into account their

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special needs related to three major areas identified on the LSI as "physiological," "environmental," and sociological." For example, some areas in the classroom may be used for independent learning, others for group study, and group discussions. Some areas may have bright light, others dim; some areas may be warmer than others; and in, some areas, eating and drinking may be permitted. There could be some quiet areas, and in some areas listening to music can be allowed. Some sections can be designed for close supervision and the others with no supervision. Similarly, some areas in the classroom can be used where students can sit informally on the carpet if it is difficult for them to sit in hard wooden chars. Since most of the minority students are field dependent, teachers should make special arrangements to place them in the area designed for group study.

2. Teaching Global and Analytic Students

It is important for teachers to examine their own teaching styles. If a teacher's own teaching style is global, most likely the analytic students in the class will not learn easily from this teacher, vice versa, if a teacher's teaching style is analytic, this teacher may not facilitate learning for those students who learn better globally. For this reason, it is important that the teachers use both methods, global and analytic, if they hope to teach successfully all students in the class.

3. Using Small Group Techniques

After the students are diagnosed on the sociological elements that they prefer to learn with their peers, they must be assigned to small instructional groups. Students who have been mostly directed by their teachers or parents in the past, may also benefit because this arrangement should give these students

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opportunity to take initiatives and make their own decisions (Dunn & Dunn, 1992). Small groups techniques are specially useful for culturally different students who are mostly field dependent (Anderson, 1988) and prefer to learn with others. The effectiveness of such cooperative learning methods is well documented in educational research literature (Johnson & Johnson, 1986; Newmann & Thompson, 1987; Slavin, 1990).

4. Using Learning Activity Packages

The ideas about individualized instruction for regular students and individualized education plans (IEP) for special education students are not new. Most of the teachers are also familiar with learning activity packets (LAPS) since the 1960s. But the idea of teaching responsive to individual and culturally specific learning styles's something new that teachers should seriously consider to incorporate as another dimension to the educational plans of their students. Dunn and Dunn (1992) have suggested a large variety of learning packages that can meet the special learning styles needs of the students. Some of these learning packages and techniques include:

a. Programmed Learning Sequences

These programmed materials are designed for those students who prefer to study independently without the directions of adults. Teachers should include multi-media materials to address the needs of visual, auditory, and kinesthetic students. Students can be helped through several small-group techniques, such as "Team Learning, Circle of Knowledge, Group Analysis, Case Study, Simulation and Brainstorming" (Dunn & Dunn, 1992, p. 198). Programmed Learning Sequences are specially useful for those students who are self-motivated, persistent, and take responsibility.

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b. Contract Activity Packages & Multisensory Instructional Packages. The Contract Activity Packages are specially useful for non conforming and above average or gifted students. Moreover, these packages permit the students to work at their own pace. For example, the advanced students don't have to wait and get bored, they can move on to the next instructional activity when they are finished.

Multisensory Instructional Packages (MIPS) can be used with those students who are not persistent and would like to take breaks frequently. These MIP's permit such students to work through several sensory channels of their choice, making them more interested in their work. The culturally different students can also benefit from MIPs because they are able to use their own culturally specific learning styles from multisensory approaches which are available to them. To conclude, it is interesting to note the comments from Lemmon (1985), a principal in Kansas who have already implemented a new program at her elementary school according to the theory of learning styles:

> The students can sit on the floor, eat during classes, and take tests at their best time of day. And it works! ... We have better test scores, happier students and parents, and a more positive school atmosphere. Learning styles do make a difference. (pp.25-29)

Philosophically speaking, teaching culturally diverse students in their culture-specific styles is a matter of being politically correct. To stand as the only super power of the world and to be the model for all other countries, it is imperative that our own educational system in America is just and caring for all the ethnic and racial minorities. If education is the gateway to the pursuit of liberty, justice, and happiness for all American citizens, these authors sincerely hope that

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enhancing educational equities through culturally specific styles is the right step in that direction.

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For further information, contact Dr. Daya Singh Sandhu, associate professor Department of Educational & Counseling Psychology at the University of Louisville, Kentucky 40292

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Examining the Relation between Learning Styles and Vocational Choice in College Students

Pedro Portes
University of Louisville

Dale Adams
University of South Alabama

Daya Singh Sandhu
University of Louisville.

Abstract

The study examined the relation between Learning Style Inventory scores and freshmen's choice of major across three academic areas. Some support for Kolb's 1974 study was found although social science majors were not found to be intermediate in concrete experience and reflective observation styles relative to physical science and arts majors. The findings provide partial validity to the construct of learning style as measured by the LSI although several limitations are noted. Directions for future research are suggested within the framework of traditional vocational theory as well as implications for counseling.

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Examining the Relation Between Learning Styles and Vocational Choice in College Students

The notion that one's approach to learning can be categorized into a finite set of styles or patterns continues to attract increased attention (Brunner & Majewski, 1990, Curry, 1990; Dunn & Dunn, 1995, 1993; Given, 1996). The prospect of matching the curriculum and teaching methods with the preferred form of learning by the individual has seemed promising with respect to useful implications for teaching and counseling (Barbe & Milone, 1989). Matching teaching styles to individual student learning by the individual has seemed promising with respect to useful implications for teaching and counseling (Barbe & Milone, 1989). Matching teaching styles to individual student learning styles is believed to promote achievement and self-confidence (Keefe, 1991; O'Neil, 1990). This field of research would also seem useful if a connection existed between vocational and learning styles. Learning style research may be regarded as most consonant with accelerated learning. However, the empirical basis for LS theoretical models remains equivocal (Curry, 1990), and so do each models' instruments. Since the concepts of learning and cognitive styles became popularized following the works of Jung (1937; 1977), Witkin (1976; 1977, 1982), and others, a number of models have emerged which vary in not only level of specificity but also in the number and types of such styles. For example, Kolb proposes four styles, two of which differ from Gregorc's (1979; 1982) model considerably. Entwistle (1978) proposed six styles. A gleaning of research reveals considerable variations in definition, goals and practice (Biggs, 1978; McCarthy, 1990; 1981, Myers &

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Briggs, 1976; Schmeck, 1983, Renzulli, 1978, Watkins and Hattie, 1981a and 1981b). A critical question in the field concerns the validation of learning styles models before questions concerning causality become plausible.

While a review of instruments and approaches in this field is beyond the scope of the present article, a few issues merit some brief attention. The conceptual bases of learning styles research are splintered and reflect significant disparity in the level of analysis. For example, some approaches are limited to preferences in sensory modalities and presume corresponding preferences in cognition and learning. Researchers in the learning styles area often confound sensory with cognitive and personality differences, which have been now extended to cultural differences.

Perhaps the main concern may be the extent to which learning style is learned, and reflects the individual's adaptation to a given environment. Most of the literature appears to suggest that like cognitive style (Witkin, 1975) and perhaps personality, learning styles are a prior predisposition in perception that influence the teaching/learning process. Yet, a developmental view is sorely lacking with respect to considering individual's learning history, cultural exposure and more importantly, the question of modifiability. Notwithstanding the above conceptual problems, a second set of issues concern the validity of many of the instruments developed under different conceptual frameworks.

Learning Styles in Counseling and Guidance

Surveys of students' intended majors (ACT) suggest that almost half of entering freshmen have not decided on a major. Efforts to help these students select a major, and ultimately a career, have involved a number of interventions including

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career development workshops, interactive computer systems, as well as personality tests and aptitude batteries.

In the last few decades, practitioners and investigators have both looked toward the constructs of learning styles and cognitive styles as potential tools which may influence undecided students' career decisions (Curry, 1987; Gregorc, 1982; Hagberg, 1978; Kolb, 1977; 1984; Ramirez & Castaneda, 1974; and Reichman & Grasha, 1975). An implication in these studies is that vocational choice is based largely upon one's preferred way of learning and one's perception of how that field of work and learning style fit together in social context that allows for choice.

The Experiential Learning Model

Learning style, in effect, can be regarded as "a student's consistent way of responding and using stimuli in the context of learning" (Claxton & Ralston, 1978). According to Kolb (1984), development is influenced by the individual's experience under various environmental circumstances.

He bases his definition of learning style on a model of experiential learning which is conceived as a four stage cycle (see Figure 1) - (concrete experience, abstract conceptualization, active experimentation, and reflective observation). In this Jungian-inspired model, Kolb contends that learning structures ". . . lie in the transaction among the four adaptive modes and the way in which the adaptive dialectics get resolved." (pg. 100).

He (1984) defines concrete learning modes as being involved in experiences and dealing with immediate human situations in a personal way (pg. 68). It emphasizes feeling as opposed to thinking. The reflective - observation mode, on the other hand, focuses "on understanding the meaning of

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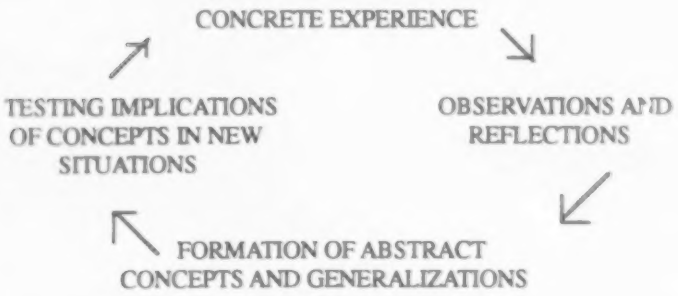
ideas and situations by carefully observing and impartially describing . . ." (pg. 68).

Figure 1
The Experiential Learning Model


CONCRETE EXPERIENCE
TESTING IMPLICATIONS OF CONCEPTS IN NEW SITUATIONS
OBSERVATIONS AND REFLECTIONS
FORMATION OF ABSTRACT CONCEPTS AND GENERALIZATIONS

The abstract conceptualization mode, as opposed to the feeling orientation, reflects use of logic, ideas, and concepts that are considered dominant characteristics in how one approaches learning. Finally, the active experimentation mode is the "doing" mode and is marked by practicality and trial and error in learning.

The four modes represent basically two dialectical processes; active versus reflective and concrete versus abstract. The placement of a person simultaneously along these two dichotomous tracts indicates a style. Kolb labels these styles as follows: accommodator (active, concrete), diverger (reflective, concrete), assimilator (reflective, abstract), and converger (active, abstract).

Related Research

Kolb's work forms the theoretical base for McCarthy's learning style model. McCarthy (1990) described her model

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in terms of four major learning styles. Her four major learning styles are: imaginative learners, analytic learners, common sense learners, and dynamic learners. According to McCarthy (1990) imaginative and dynamic learners perceive information concretely, while analytic and common sense learners perceive information abstractly. However, in terms of information processing, imaginative and analytic learners are reflective, while common sense and dynamic learners are active.

The work of Kolb has led to some interesting assumptions which may be of benefit to those working within a college setting. Using the Learning Style Inventory (LSI) developed by Kolb, investigators have found significant relationships between learning style and field of study of specialization (Kolb, 1984), as well as career choice, level of social adaptation and performance.

The predictions of academic specialization based on LSI scores, as well as the impact of a field of specialization on the learning style of the student, have important implications for academic advising and career counseling, as well as for providing of academic assistance to students.

Kolb's (1984) data, based on LSI scores of managers (or would be managers) suggested that certain learning styles tend to predominate in certain majors. For instance, a majority of business majors were accommodators, English majors were divergers, engineers were convergers, and chemistry majors were assimilators. Using the same sample, he confirmed that grouping majors in the arts, social sciences, and physical sciences, the arts majors tend to be more concrete and reflective, the physical sciences more abstract and active, and the social sciences were somewhere between the two extremes.

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Vocational Theory

Vocational theory tends to support the idea that a person seeks areas of work that are consonant with intra-individual characteristics such as self-concept (Super, 1981) and their whole personality (Holland, 1973). From a psycho-social view, individuals develop an identity as well as a self-concept (which denotes how they feel about their identity) in several areas such as sexual, social, vocational, moral and others. A by-product of the identity formation process may include the ways through which they learned about themselves and others which can be characterized as a learning style. According to Super, a person will seek a career which allows implementation of one's self concept, and by extension, (the authors') their learning style. Holland, on the other hand, proposes six major fields of human endeavor which favor certain personalities. In essence, vocational choice involves matching one's personality with that area of work which is most consonant. For example an entrepreneurial person may seek a different type of job than one who is artistic/ creative or one that likes structure and order. Again, by extrapolation it would seem plausible that people seek areas of specialization that are most "permissive" in allowing full display of preferred modes of perception and information - processing. In sum, the link between college major selection as a means to career choice and learning style (as a stable but evolving personal trait) warrants further attention.

If Kolb's findings are valid, the success of students in a particular major may be influenced considerably by the match between learning style and the demands of the academic discipline. In fact, students in some majors whose learning styles are compatible with the expectations of the discipline have higher grade point averages than students who have a

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learning style which is not as compatible (Kolb 1981). In addition, students with style and major compatibility showed greater social adaptation. Kolb, Schein, and Rubin (Kolb, 1984) found there was higher anomie and greater alienation among students that were in a discipline that emphasized a style different from their own.

Purpose and Rationale of the Study

Research that addresses the above findings may be helpful in counseling students to make career choices that are in line with their learning strengths, as well as curriculum structuring and teacher education. Rather than relying primarily on interest and/or aptitude inventories for example, counselors may help students identify areas of specialization that are compatible with their learning style.

Since Kolb's predictions were based on graduates already at work or in graduate school and students already in their respective departments, it would be useful to explore if similar predictions can be made about students prior to entering a major field and if such differentiation precedes commitment to a major. In effect, to what extent does the learning style of an entering student predict subsequent choice of major? This question is relevant to guidance and vocational counselors as well as to the emerging body of knowledge in career counseling. Are the learning styles of students in arts, social sciences and physical sciences significantly related to their choice of major? Support for Kolb's model is critical, particularly if the LSI is to be widely accepted.

Finally, a key issue in the field is that of determining the properties of a test which purports to measure learning style. One way to increase the validity for the LSI would be to

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ascertain the extent to which learning style correlates with areas of study that have "functional or practical commonalities."

This report attempts to examine the value of experiential theory with regard to learning styles in three broad academic areas. It explores the extent to which now college students choose fields consistent with their learning style.

Method

Subjects. The participants were 1,972 students in a summer orientation program at a large, comprehensive, Midwestern university over a two-year period. There were 1,190 males and 863 females from all major fields. Table 1 shows individual career groupings.

Instruments. The Learning Style Inventory, published by McBer and Company, was administered to all students. A glossary was developed and given to each student to provide some assistance with the vocabulary of the test.

Procedure. The participants were divided into groups of approximately 30. Faculty and staff members administered the inventory during six sessions in the orientation program. Each session lasted one and a half hours for administration and interpretation of the inventory.

At the end of the session, the students were asked to submit their scores as well as their intended major on a sheet provided. They were also given the opportunity to ask for further assistance or explanation of the scores.

Results. A multi-variate analysis of variance was conducted initially to examine potential differences among academic areas in the six variables measured by the LSI. This mode of analysis was chosen to reduce the probability of

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committing Type 1 errors. The overall multi-variate F test was significant, F (S=2, M=1.5, N=751) = 6.3, p.<0001). The follow-up F tests for concrete experience (CE), abstract conceptualization (AC), active experience (AE), and Abstract-Concrete were all significant at the .0001 level. Reflective observation differences among groups was also significant at the .05 level. AE-RO differences were not significant. All analyses of variance tests were conducted with 2 and 1509 degrees of freedom.

Follow-up tests were conducted to analyze LSI mean differences across academic groupings. Table 1 summarizes these results and indicates statistically significant differences.

The general pattern of the data supports earlier findings that arts majors possess more reflective styles than those in the physical sciences. However, the general pattern found by Kolb for social science majors was not replicated for the concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentative (AE) learning styles. That is, social science majors were not found to be intermediate among the three groups on the average, particularly on the CE and RO scores.

From these data, it does not appear that the differences between arts and physical science (PS) majors are of practical significance for concrete and reflective learning styles. However, majors in the physical sciences do appear to employ a more active-experimentation (AE) style than arts majors as suggested earlier. As Tables 1 and 2 show, significant differences in learning styles tended to differentiate social science from physical science students upon entrance to college. Only in the active experimentation (AE) area were students in the arts found to be most different from

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physical science majors (p.<003).

The present study also suggests that social science majors tend to be divergers while physical science majors are predominantly convergers. By far, the most striking difference found was between social science and physical science majors within the abstract/concrete dimension. The arts majors tended to fall in between the other two groups in all but two of Kolb's learning style typologies (see Table 1).

Students in architecture, interior design, journalism, music, foreign language, and others included in the arts categories tended to use active experimentation in learning, less than students in the physical and social sciences. This supports the basic contention that intuition, a reflective activity, is characteristic of those in the arts.

Finally, there were no significant differences for the active-reflective dimension in learning style. It should also be noted that the present study allowed inspection of LSI scores for students whose major was undecided. The learning style of undecided majors was intermediate among the other academic areas. By and large, undecided students are more closely related to the social science and arts majors. Perhaps, physical science majors tend to decide on their career pattern earlier, something which would be subject to the process of accentuation, and possibly identity or achievement foreclosure (Erickson, 1968).

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Table 1
Means and Standard Deviations for the LSI in a Class of Entering Freshmen*

	Concrete Experience (CE)		Reflective Observation (RO)		Abstract Conceptualization (AC)		Active Experimentative (AE)		Abstract Concrete (AC-CE)		Active Reflective (AE-RO)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
ARTS												
(n=181)	14.72	2.78	14.83	3.45	16.36	3.18	15.30	3.52	1.64	4.98	.089	5.69
Kolb (n=137)	**15.40**	**3.26**	**14.20**	**3.35**	**16.70**	**3.68**	**15.11**	**3.37**	**1.31**	**6.18**	**.96**	**5.95**
SOCIAL SCIENCE												
(n=481)	15.29	2.99	15.00	3.05	15.76	3.34	16.23	3.33	0.52	5.28	1.53	5.21
Kolb (n=169)	**14.20**	**3.35**	**12.75**	**3.68**	**18.05**	**3.67**	**16.09**	**3.43**	**3.86**	**6.23**	**3.31**	**6.37**
PHYSICAL SCIENCE												
(n-874)	14.46	2.91	14.54	3.25	16.86	3.41	16.11	3.08	2.49	5.37	1.67	5.26
Kolb (n-436)	**13.20**	**3.16**	**12.70**	**3.17**	**18.98**	**3.57**	**16.53**	**3.35**	**5.64**	**5.83**	**3.83**	**5.69**
UNDECIDED												
(n=436)	15.10	2.90	15.04	3.24	16.47	3.30	15.83	3.27	1.55	5.06	.95	5.41

*T-tests of group differences between physical science and social science were significant at p<.01 for all LSI sub-tests except AE and AE-RO. The only significant difference between physical science and arts was AE p<.002. Significant differences between Social Science and Arts were RO, p<.02; AE, p<.03; AC-CE, p<.003.

Light Print - U of L **Bold Print - Kolb Sample**

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Table 2

Group Mean Differences by Academic Major

	Academic Area		
	(1) Social Science	(2) Physical Science	(3) Arts
Learning Styles	1 vs 2	1 vs 3	2 vs 3
Concrete Experiential	.0001	n.s.	n.s.
Reflective Observation	.01	.02	n.s.
Abstract Concept-ualization.	0002	n.s.	n.s.
Active Experiential	n.s.	.03	p .003
Abstract/Concrete	.0001	.002	n.s.
Active/Reflective	n.s.	n.s.	n.s.

NOTE: n.s. = not significant

Discussion

The study suggests that entering freshmen's LSI scores vary considerably from the scores of graduate students in management positions. Students in the arts, however, tend to be fairly consistent before and after college. The differences between these data and Kolb's reflect quite possibly that students' learning styles are subject to change and are not fully stable during the first year of college. It is not surprising to find a different pattern of results from Kolb's report since sampling procedures varied considerably. If one can assume that a person's learning style becomes more stable with time, then it may be that entering freshmen may experience events in college that can alter occupational choices, particularly in the physical and social sciences. The above differences are

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pertinent to Kolb's notion of accentuation, in which congruence between learning style and a fields' structure of knowledge leads to strengthening of that style. Kolb (1984) notes, "if students with a particular learning style choose a field whose knowledge structure is one that prizes and reinforces their style of learning, then accentuation of the approach to learning is likely to occur (Kolb, 1984)." This assertion is consistent with a number of learning and developmental principles in psychology; such as behavioral, cognitive-behavioral and cultural-historical theory (e.g., Van der Veer & Valsiner, 1991).

Future research needs to determine the proportion of students attaining a degree in the same (or similar) academic area as initially chosen varies systematically across majors. It seems plausible that, upon entrance to college, students' knowledge of the learning style required for their major is not very sophisticated. More important, the match between students' learning style and the style "favored" in respective academic areas is usually not discernible to them or faculty. Very few academic departments or fields intentionally promote a "style", however, the demands in mastering a field may shape differences in learning. A style may emerge by virtue of the preferred learning styles of a faculty, relative to others. Further research in this area is needed to determine if students who drop out of change majors are predominantly those whose learning styles are different from those who completed successfully the requirements of their degree program.

An area for future investigation is to determine the extent to which learning style is modifiable. For example, to what extent do academic areas influence the learning style of students (particularly those who have initially different cognitive styles) from that which is characteristic of a

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discipline? An important research direction is that of determining the extent to which student's shift vocational choice within their styles zone of development and the note of cultural conditions in directing occupational decision. Finally, and perhaps most importantly, the LSI needs to be revised so that ipsative scales can be avoided. This is a problem which renders the present research as exploratory at best. Although parametric statistics are robust, and similar results were found when employing non-parametric test, it would be advantageous to modify the research instrument which is generally associated with a promising theory in the adult learning field. Only after these problems are resolved may the current approach become useful in accelerating learning, teaching and development.

These and other areas require further attention before concluding that LSI scores are predictive of success in various fields. In sum, some of Kolb's findings were replicated although these data suggest that learning style is malleable prior to completing college. Finally, the "match" between learning styles and academic areas needs to be more clearly established. This will require longitudinal research designs involving students before, during, and after college, and which adopt a more developmental focus.

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Effects of Supervisor Instructional and Supervisee Learning Styles on Development of Basic Counseling Skill Competency

Daisy B. Ellington and Thomas W. Gilroy
Wayne State University

ABSTRACT

This study focused on the matching/mismatching of the supervisor's and supervisee's cognitive styles and the effects on the supervisee's basic skill competencies.

Effects of Supervisor Instructional and Supervisee Learning Styles on Development of Basic Counseling Skill Competency

Supervised counseling practicum is traditionally recognized as a critical component of counselor education (Cross & Brown, 1983). The supervisory process affords the learner an opportunity for direct feedback. Lanning (1971) and Patterson (1964) indicate that supervisors directly affect the performance of the supervisee. The counselor supervision literature provides little agreement as to what is the most effective model of supervision.

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Three studies were found that compared the cognitive styles of the supervisors and supervisees. Birk (1972) studied the effect of supervision on empathic understanding. She studied the effect of matching or not matching supervisory style with the preferred type of supervision by the trainee. Comparisons were made of each style's effectiveness in teaching the counseling skill of empathic understanding. The results suggest that during the early phases supervision is not contingent upon supervisee's preference. A mismatch of preferred supervisory styles did not deter learning during supervision. Receiving the preferred mode of supervision does not necessarily facilitate learning.

Handley (1982) reported that trainee satisfaction with supervisors might be related to the degree of cognitive similarity. Handley suggested that supervisors and trainees be aware of each other's cognitive styles in order to achieve better interpersonal relations and greater satisfaction with the supervision process.

Carey and Williams (1986) further investigated Handley's (1972) research. Their results did not agree with Handley's findings. They report that cognitive style compatibility had no demonstrated importance in the outcomes of the supervision process.

These studies looked at the relationship of the supervisor/supervisee relationship but did not use the supervisee's learning as outcome measures. Stress in the supervisor/supervisee relationship can arise from differences between the supervisor and supervisee (Dodge, 1982; Carey & Williams, 1986; Alderfer & Lynch, 1986). Dodge (1982) reports that this relationship can be surrounded by anxiety

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due to the evaluative qualities that exist. A prevailing point of view (Bernier, 1980; Boyd, 1978; Guttman, 1973; Mueller & Kell, 1972) stresses the importance of helping supervisees resolve their anxiety (as cited in Dodge, 1982). Another contributor to stress is the expectations brought into the relationship. Past experiences can color the expectations of the supervisor and supervisee (Alderfer & Lynch, 1986). It is suggested that communication will occur with greater ease and less misunderstanding between a supervisor and supervisee who share a common cognitive style (Carey & Williams, 1986).

It is hypothesized that by matching supervisee and supervisor styles, supervisees could develop greater clinical skill competency. Further, the findings from this study will offer counselor educators a more effective method by which supervisors and supervisees can be assigned. Therefore, an investigation of the relationship among supervisor instructional and supervisee learning styles as measured by clinical skill competency outcome could provide a clearer understanding of the effects of counselor supervision.

This study focused on the matching/mismatching of the supervisor's and supervisee's styles and the effects on the supervisee's basic skill competencies. Basic skill competency is defined as the ability to use basic counseling skills and techniques in order to carry through the treatment plan. The basic skills primary to this study include; (1) effective listening, (2) open and closed questions, (3) minimal encouragers, (4) paraphrasing, (5) reflection of feeling, (6) reflection of content, (7) goal planning, (8) evaluation of goals, and (9) summarization (Ellington, 1993).

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METHODOLOGY

Setting

Supervisees conducted counseling sessions with clients from adult education programs, public and private schools, substance abuse residential facilities, public and private mental health agencies, family counseling centers, and vocational placement programs all located in a large mid-western metropolitan area. Some clients at the Counseling Center were beginning counseling students fulfilling introductory course assignments. Other clients at the Counseling Center and off-site locations were referred because of emotional, behavioral, and career related concerns which ranged from mild to severe. The Counseling Center contained audio/video recording equipment and an observation gallery for use by supervisors and supervisees. At off-site locations, supervisees used audio recording equipment for taping counseling sessions for use in supervision.

Supervisees

Twenty-eight students who were enrolled in the counseling practicum component of a masters-level counseling program participated in the fifteen week study. The students had completed all of the prerequisite academic course credits. Supervisees were seven males and 21 females, ranging in age from 25 to 54, with a mean age of 36.4 years. The racial breakdown included three Black males, four Caucasian males, nine Black females and twelve Caucasian females. The supervisees were employed as teachers, academic advisors, case managers, counselors, or had clerical/service-related positions except for two who were unemployed.

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Supervisors

Fourteen students who were enrolled in the internship component of the doctoral-level counselor education and supervision program served as supervisors for the study. Supervisors included eight females and six males ranging in age from 26 to 55 years old with a mean age of 38.5. The racial breakdown included four Black females, one Hispanic male, four Caucasian females and five Caucasian males. The supervisors were either concurrently enrolled in an advanced course in supervision or had completed this requirement. The supervisors' level of experience included three novice (no experience), eight beginner (1-2 years experience), two intermediate (3-5 years experience), and one advanced (6 or more years experience).

One doctoral student rated the pre-post basic skill level of the supervisees using the Basic Skill Observation (Ellington, 1991). This rater had no contact with the practicum supervisees during the study in order to eliminate bias and to maintain integrity in evaluation.

Procedure

Fourteen supervisees were assigned to supervisors based on a match between supervisee learning style and supervisor instructional style. The remaining 14 supervisees were assigned to supervisors whose instructional style was not a match.

Twelve females ranging in age from 25 to 54 years of age and two males who were 37 and 42 years old respectively were in the matched group. The racial breakdown of the matched group was six Black females, one Black male, six Caucasian females, and one Caucasian male.

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Nine females ranging in age from 27 to 44 years old and five males ranging in age from 26 to 51 years old were in the unmatched group. The racial breakdown of the unmatched group was three Black females, two Black males, six Caucasian females, and three Caucasian males.

At the beginning of the first practicum session, the supervisees were given an overview of the procedures and requirements for practicum. They voluntarily agreed to participate in the study and complete the criterion instruments. Supervisees began client counseling sessions the following week. Individual supervision sessions were scheduled one hour weekly beginning the second week and continuing for the entire 15 week study.

Due to the initial anxiety of practicum students (Ellington, 1993) and to secure a more credible rating of the supervisees' level of basic skill competency, the investigators chose to use the third counseling session audio tape as the pre-test measurement. Counseling session audio tape number 40 was used as the post-test measurement of basic skill competency.

Criterion Instruments

The Learning Styles Inventory (LSI, Canfield, 1980) was used to determine the supervisee's learning style. The term "learning style" refers to the affective component of educational experience, which motivates a student to choose, attend to, and perform well in a course or training exercise (Canfield, 1980, p. 1). The Instructional Styles Inventory (ISI, Canfield & Canfield, 1986) was used to determine the supervisor's instructional style. The ISI is designed to be used by instructors in educational and business settings to identify the conditions

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under which they teach best (Canfield & Canfield, 1988). Research validates the complementary structure between the LSI and the ISI (Gruber & Carriuolo, 1991). The 30-item LSI (Form A) and the 25-item ISI requires respondents to read each question and then rank the four response alternatives in order of their preference.

The Basic Skills Observation (BSO, Ellington, 1991) is a 16-item subjective self-report scale designed by the investigator to measure supervisee's competency in application of basic counseling skills. The rater evaluated the use of basic counseling skills (e.g., reflection of content and feelings, paraphrasing, open-ended questions, minimal encouragers, confrontation, goal planning, summarizing) using an seven point scale from "poor" to "excellent". Higher scores are assumed to indicate higher levels of basic skill competency. Reliability and validity data for this instrument has not been gathered or reported.

Statistical Analysis

The independent variables are the demographic characteristics (i.e., gender, age, race/ethnic category, employment status, counseling experience) and the assignment of the supervisees to the treatment conditions (i.e., Matched Group, Unmatched Group). The dependent variable is basic skill competency as measured by outcomes on the Basic Skills Observation (BSO, Ellington, 1991).

RESULTS

A profile analysis of repeated measures (MANOVA) was used to determine whether the matched and unmatched groups differed significantly on the dependent measure. Overall, the group means were not significantly different,

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$F(1,26)=.53$, $p=.740$. However, the test to determine the parallelism and flatness of the two groups exceeded the .05 level of statistical significance, $F(1,26)=6.00$, $p=.021$.

TABLE 1

OVERALL TEST OF MATCHED/UNMATCHED GROUPS

SOURCE	SS	DF	MS	*F*	SIG. *F*
WITHIN	14841.64	26	570.83		
GROUP	64.29	1	64.29	.11	.740

TEST FOR PARALLELISM AND FLATNESS

SOURCE	SS	DF	MS	F	SIG.F
WITHIN	8226.21	26	316.39		
SCORE	504.00	1	504.00	1.59	.218
GROUP BY SCORE	1897.79	1	1897.79	6	.021

When plotted out, the means for these two groups intersect, with the matched group displaying a positive slope and the unmatched group displaying a negative slope. Since parallelism and flatness were significant, a simple effects analysis was performed where differences among means for the groups were examined separately at each level of the repeated measure. The results showed no significant mean differences between the groups when either the pre or post

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score is used as the dependent variable, Group by MWITHIN (1) F=1.33, p=.260 and Group by MWITHIN (2) F=3.24, p=.083.

TABLE 2

SIMPLE EFFECTS ANALYSIS

SOURCE	SS	DF	MS	F	SIG. F
WITHIN 1	12395.21	26	476.74		
MWITHIN SCORE 1	164016.04	1	164016.04	344.04	.000
GROUP BY WITHIN SCORE 1	631.75	1	631.75	1.33	.260
WITHIN 2	10672.64	26	410.49		
MWITHIN SCORE 2	190740.04	1	190740.04	464.67	.000
GROUP BY MWITHIN SCORE 2	1330.32	1	1330.32	3.24	.083

DISCUSSION

The means for the two groups were not significantly different. Based on the findings of this study, there was no conclusive evidence to support either matching or non-matching of supervisor/supervisee cognitive style. Therefore, support can be made for Carey and Williams (1986) findings that cognitive style compatibility has no demonstrated importance in the outcomes of the supervision process.

However, one indication found that the matched group scores tended to increase from pre to post administration while the non-matched group scores decreased. This study

had a limited number of participants (supervisor n=14, supervisee n=28) and limited variety of cognitive styles (26 neutral, 7 applied, 3 independent/applied, 2 independent, 3 conceptual, and 1 independent/conceptual). A statistically significant difference might be found if the number of participants were increased and/or a greater variety of cognitive styles were available.

Learning styles are not totally mutually exclusive. One of the many problems associated with this research is that numerous additional factors (i.e., sex, age, life experiences, personal preferences, work experience) of both the supervisor and supervisee may confound the relationship between learning and supervisory styles. Interpersonal dynamics could also be an important consideration in matching students with supervisors.

Research is scant on the effects of supervisory experience (Leddick & Dye, 1987) and counselor trainee skill development. Future investigations will need to control for supervisory experience level if counselor educators are to understand the pattern of supervisory styles and counselor-in-training competency development.

Due to the limited number of participants available for this study, the results cannot be generalized to populations of counselor education supervisors/supervisees as a whole. However, future research might include replicating this study across similar practicum programs, increasing the participation level and adding a control group to assess the contribution of supervision outcomes.

Supervisory knowledge and competency needs to be determined in relation to a set of uniform, equitable criteria. By identifying and keeping the various components of

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counselor training in balance, one might assume the creation of an environment in which students can grow as professionals.

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Sources of reference information on accelerated learning

The easiest access to published information on accelerative (-ed) learning, SALT, suggestopedia, and Super Learning is through the ERIC system available in many university and college libraries. Secondary sources are *Dissertation Abstracts* and *Psychological Abstracts* along with the periodic author and topic indices of the *Journal of Accelerated Learning and Teaching*. Chapter 3 of *Suggestive Accelerative Learning Techniques* (1986) by Schuster and Gritton [University of Toronto Press] has an extensive review of the literature then available.

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Nancy Omaha Boy, Ph.D.
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406 Penn St.
Camden, NJ 08102
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Role Playing In Accelerative Teaching

Galina Tersaakyants
Wilbur Wright College, Chicago

ROLE PLAYING IN ACCELERATIVE TEACHING

One of the most prominent aspects of accelerative teaching involves the use of role playing in instruction. (Lozanov, 1978).

Instruction is structured in the form of group cognitive exercises, involving controlled conversation between the instructor and group and among members of the group. Instruction in conversation in a foreign language occurs in the context of a variety of situations simulating actual verbal communication. Here, the situations created by the teacher during the lessons are structured so as to interweave role expectations and informal manifestations of individual personality [i.e., so the students express both aspects of their assigned roles and aspects of their own personalities]. Thus in accelerative teaching actual interstudent and simulated role-based conversation are combined. Role-based conver-

sation continually interacts with interstudent conversations and acts as a prerequisite and precondition for it. Furthermore, instruction itself in the form of interpersonal communication, in many instances, takes place through role playing. How can we characterize role playing in its capacity as one of the methods for conducting instruction and general education? We will list its most important features:

- improvisational playing of roles;
- the conventional nature of the situations for which role playing occurs;
- the social nature of these situations;
- the existence of role-based expectations;
- stimulation of interstudent communication within the class;
- creation of conditions conductive to the mani festation of creative abilities (Barychnikova, 1984).

Role playing helps to actualize the principles of accelerative teaching, stipulating the simultaneous utilization of conscious and subconscious (latent) mastery of the subject of instruction, and in particular, the need to involve a student's emotions so as to facilitate learning (storage) of the educational material. Role playing creates the conditions conductive to the use of a variety of methods for psychologically influencing the student and also is compatible with the principle that individual learning be achieved through group activities.

In various modern sources (Filatov & Livchitz, 1985; Vaisburd & Ariyan, 1984) role playing is defined

as "dramatization on preset subjects", as a form of verbal practice at the final stage of work on a topic, and as a rehearsed presentation with assigned roles. However, such definitions of role playing correspond to a narrow understanding of "conversational practice" and do not reflect the psychosocial characteristics of conversation in the foreign language within a system of accelerative teaching. Role playing within the system of accelerative teaching is not merely an occasional instructional technique, which the instructor resorts to from time to time, but a major way to structure the instruction, employed at all stages of study of the instructional material, i.e., introduction, training in communication, and practice in communication (Kitaigorodskaya, 1988).

The Structure of Role Playing

Role playing has the following aspects: its objectives, its content, the set of social roles, and the communicative and didactic conditions under which a piece of role playing is performed. A distinguishing feature of communication through role playing is its duality, engendered by the separation of the process of learning and the process of teaching. Thus, we can consider the objectives of role playing from two different standpoints: that of the student and that of the instructor. For the student, role playing is a play, its didactic nature is not apprehended. The behavior of the student is directed at attaining his or her direct objective, i.e., performing the assigned role within the play. At the same time for the instructor, role playing is mainly a way to control group interactions among the students in order to attain instructional and general educational objectives.

The content of role playing concerns interpersonal relationship, which are manifested and developed during the process of communication. Role playing models interpersonal interactions among the members of a group while they are engaging in joint cognitive activity. This is achieved through the use of specially developed linguistic instructional material pertaining to some particular topic which is meant to be developed during the course of a role playing exercise.

The central component or role playing is, of course, the role, or more precisely, the set of social and interpersonal roles that, as the students implement them, draws into the process of communication and learning to communicate (in the foreign language). The unit in role playing, the basic structural component of this activity, should be considered to be the role and the actions associated with it. The selection and assignment of roles is an important pedagogic device and presupposes the instructor's familiarity with the individual personality traits of the students, their interests, capacities, and real-life experiences. Only a creative approach will allow the teacher to assign roles to the different students effectively, with a view toward the potential for developing their personalities as well as their conversational skills. To assess some psychosocial characteristics a questionnaire was used (Ter-Saakyants, 1995).

A the theory of roles has developed, it has expanded in scope. It is currently being utilized in sociology, social psychology, game theory, and dramatics.

Lozanov (1978) was the first to propose the use of social roles in the suggestopedic method for teaching foreign languages.

The word "role" comes from the Latin word "rotulus" - the roll or scroll on which, in ancient Greece and Rome, the text of a play was written for the prompter, later the actor himself read the script from the "rotulus". Then "role" began to be used to refer to the performance by an individual of a particular social function.

There are various methods for classifying roles. From the point of view of teaching role-based communication, of greatest interest is the classification scheme devised by Gerhardt, according to which roles are divided into:

- Status-based roles, which can be fixed at birth or acquired in the course of life: for example, the role of a citizen of a particular state, mem bership in a social class, etc.
- Position-based roles, which are typically gov erned by rules determining a certain position in society: for example, professional, family roles, etc.
- Situational role, taking the form of fixed stan dards of behavior and action that require only relatively short-term participation in a commu nicative situation: for example, the role of quest, tourist, pedestrian, etc.

According to the theory of social roles, an individual occupies a definite place within the system of social relationships, defined by the concept of "position".

Each individual has many positions. Researchers identify three main types of position: professional, social, and familial (Tarasov, 1982).

With regard to the complexity of the structure of social relationships, each individual occupies many positions in society. A person occupying a certain position in society plays a certain social role. Thus, when they communicate, people act toward each other not only as unique individuals, but also as players of social roles. A certain type of behavior is expected from every individual playing a certain role. These expectations define the concept of "role-based expectations". Lack of correspondence between role prescriptions (rules governing performance of role-based activity) and role expectations are considered to result from the lack of ability of an individual to play his/her social role in accordance with the requirements of that role.

The playing of situational roles is of greatest interest to the development of communication skills in a foreign language. These rules are not formalized. They allow free interpretation and provide broad potential for expressing individual interests, in accordance with an active approach to instruction.

What place do roles have in accelerative teaching ? At the start of the course of instruction, each student is assigned a status-based role (he/she is given a new name, is assigned the appropriate nationality, and citizenship, etc.) and a positional role (profession, job and family position, etc.). These roles are incorporated in the primary material of instruction in the form of role-

based multiperson conversations. The subject matter of the course is developed from one conversation to the next (the visit of a group of tourists to Russia, or a group of students coming to a country). In each lesson-conversation, certain events occur, "happening" to the group (Barychnikova, 1984; Fastovets, 1984; Leontiev, 1982; Lozanov, 1971).

Experiences show that the assumption of a new name has great psychological, pedagogic, and instructional significance and is a condition conductive to the effective control of communication. The student, depending on his/her personality type, may "hide" behind his/her mask, but at the same time the mask serves as an effective means of self-expression. The mask facilitates the elimination of the "language barrier", helps to overcome "fear of making a mistake", and brings creative potential into play. This is the reason for its psychotherapeutic and psychosocial effect. The mask provides the framework for the conversation. However, the mere assumption by a student of the status-based roles (masks) does not signify and does not ensure all the conditions necessary for truly assimilating that role. It only expands the potential for the student's linguistic behavior. Having put on the mask, the student nevertheless remains himself (or herself), retaining his/her capacities to manifest his/her own personality traits. Such masks are of must adapt to the new conditions. During the subsequent stages of instruction, the teacher does not always resort to them. Because they embody systems of values, roles (or masks) also facilitate moral and ethical education and the social attitudes inherent in the educational process. The roles assumed by na-

tive speakers in the language being studied can also have great cognitive significance. The texts of role playing exercises may be constructed to provide practice in distinguishing between phonemes and pronouncing sounds that are difficult for non-native speakers. Following is an example of this type of text (Ignatova, 1982):

"There is an International Congress in Chicago. The theme of the Congress is "Science for Peace and Progress". Scientists from every continent are coming to the Congress: from Europe, Asia, North and South America, Australia and Africa".

"... - This is Mr.Russell,
Brandon
the sociologist from London.

... - This is Mr.Bernard Berg
from Bern.

... - Oh, if it isn't
Tony Dakota
the bravest
astronaut
from Minnesota !

... - This is Pat Harris,
a physicist from Paris.

... - Mrs. Kate Pagan,
a chemist
from Copenhagen.

The communicative and didactic conditions conductive to accelerative teaching are ensured primarily by assigning a conversational situation and establishing the location, time, and the other parameters of the role playing exercise. It is important that the situation assigned to the students be interesting and significant to them.

Researchers studying role playing (Argustanyants, 1982; Elkonin, 1978; Leontiev, 1982) emphasize its multifunctional nature, identifying its motivational, instructional, and general educational functions. Unlike dialogues or plays, which teach students how to say something, role playing answers the question of why and for what purpose something must be said. In this sense role playing fulfills a motivational function. Role playing is one of the most effective means for motivating students to converse in a foreign language.

Structuring teaching around role playing justifies the requirement that the students converse, and increases their interest in the subject of instruction. Play is a special type of activity in which the motivation lies in the process itself, in the content of the activity (Zimnyay, 1985; Leontiev, 1969). Role playing is not a formal linguistic exercise, but rather an active means for motivating students to engage in speech acts (by means of which conditions conductive to the mastery of the skills and habits of communicating in the foreign language are created). Because of this, one can speak of the instructional function of role playing.

The instructional function of role playing involves expansion of the thematic content of communications in the foreign language making them interesting and significant. When a student acts according to the dictates of his or her assigned role, he or she is not limited by the context of actuality. Rather, by playing a variety of roles, he or she can go beyond their bounds. Owing to this, the student's speech becomes richer in subject matter and grows more lexically saturated and stylistically appropriate. In addition, through supplying the motivation for speech acts, a role provides the student with a communicative program (or framework) and governs the choice of linguistic devices, i.e., places limits on the possible variations of forms of expression, which are very important for forming habits. The set of linguistic devices necessary for playing a particular role and performing an assigned communication exercise is provided either by furnishing the students with model conversations (during the stage of training in communication) or as initial conditions before the role play (at the stage of conversational practice). Following is the example of role games at the stage of training in communication. The topic is "school":

1. You have been admitted to University.
You need to find out where the library (department of foreign languages, gym...) is. Ask the student about it.
Summary: One student tells where they are located.
(Performed in pairs)

2. You are a group of teachers from Great Britain.
Today you have a meeting with representatives of Northwestern University. Ask them about the University.

(Performed by groups of four, two English teachers, two American colleagues).
Summary: One student speaks about the University.

3.3. You are a group of sociologists doing the survey of the student's working day. (Performed by group of three, one sociologist, two students).

4. You are a journalist. Interview a Professor of Linguistic on the importance of Foreign Languages knowledge.
(Performed by groups of two).
Summary: One student read the article.

Following is the example of role games at the stage of communication practice. The topic is "city":

1. You are a cab driver and you like the city very much. Tell your passenger about its streets, squares. Answer passenger's questions.
(Performed in pairs).

2. A delegation from another state is coming to your University. You have been asked to take them on a tour around the city.

3. You are a group of architects. Present your project of a new district to the municipal commission.
(Members of the Municipal Commission are named. The remaining students work in groups of three. The "project" is presented by one member of the group, The chairman of the commission summarizes the best "project:).

4. Advertise the city you love the most.

From the above, it is clear that role playing is not merely an isolated fragment of the instructional process or the final stage in the development of conversational skills, but it represents the mainstream of the structure and content of the entire course of instruction and furnishes the main parameters for careful and meticulous study of the educational material. It is precisely during and through role playing that the formation and development of conversational skills and habits take place. It is desirable to begin role play with the very first lesson, to have the first presentation of text take the form of a multiperson conversation, with the teacher (who at the beginning, takes the role of all participants) describing to the class the events pertinent to each conversation, which naturally unfold as a result of the communicative situation. The second presentation of new educational material also should involve role play, the goal of which should be the students' own first active utilization and learning of the linguistic material.

Active mastery of educational material within accelerative teaching is also based on role play. The formation of habits and the development of skills occur in the context of role playing at various levels. The level of role play is determined by the stage of mastery of the educational material - "training in communication" or "practice in communications" and thus the corresponding type of lesson. The role playing used at different stages of work differs by virtue of the relative proportions of compulsion and freedom the students have in

their selection of linguistic devices to be used in the process of communication.

Control of Communication Using Role Play

How is the process of communication controlled and the formation of skills and habits achieved during the process of role playing ? During the stage of training in communication, the formation of habits is achieved in role playing through use of conversational models and templates and extensive use of visual aids and hand-outs.

Role playing at this stage entails rigid control of the speech activity of the student. It is marked by a rigid framework to which the student must adhere is selecting the linguistic devices needed to implement their roles within the confines of the given material. For this purpose it is recommended to strictly predetermine the parameters of the conversation from the very beginning, consciously limiting their variation, selecting and combining them to ensure optimal conditions of communication. And then when the students have begun to develop the habits and skills of communicating in this rigidly fixed, controlled communication situation, to gradually remove the limitations, vary the parameters and the situations themselves, so as to facilitate the transfer of the skills that have been formed to new situations (Leontiev, 1982). One characteristic of skills developed through role playing is their stability, their resistance to interference and extinction, and at the same time their

flexibility and ability to be transferred to different situations involving role-based communication.

As work progresses on the educational material, role playing with strictly fixed conditions and a preassigned set of linguistic forms (stage of training in communication) gives way to role playing offering relative freedom and opportunity for improvisation (stage of communication practice). In such role playing, the linguistic activity of the students is directed (rather than controlled). In phase I role playing (control of students' speech activity), a rigid framework is provided by model conversations guiding the selection of linguistic devices and precisely formulated communication assignments and situations. Exercises in phase II (direction of the students' speech activity) involve an advanced stage of role playing (improvisation) allowing relative freedom in the selection of linguistic devices. Students independently develop the theme for their improvisations, supplementing it with their own content and implementing it using the entire set of linguistic devices available to them. The instructor guides this creative process by assigning roles, stipulating the conditions of the role playing improvisation, and suggesting its denouement and the staves of its development.

The shift from role playing involving control of the speech activity of the students to role playing involving direction of their speech activity does not take place in a single step, but occurs through use of transitional types of role playing. Such role playing is utilized during the final phase of "training in communication" and at the beginning of "communication practice".

The use of improvisations, considered to be a form of relatively independent role playing, since they are creative exercises, has great instructional and educational significance. Through preparing improvisations and participating in them the students exercise initiative and active problem solving in their role playing and linguistic behavior. This solves the problem of developing linguistic initiative in the students. Improvisations develop imagination and inventiveness and teach the students how to be creative. They facilitate the formation of an active personality capable of creative thinking. The students' independence in the preparation and presentation of the improvisation in many ways encourages them to be active: they serve as directors, actors, playwrights, and even teachers when they correct each other's speech.

The highest level of role playing is the fact that actual communication between students is of primary significance. Personal role playing is typically the last stage of work on an instructional microcycle. During a microcycle, each student takes a large number of roles, as a result of which he/she masters the requisite linguistic material and can vary it freely. This emancipates the students, so that they begin to freely converse in the foreign language and to express and argue in favor of their own opinions. At this higher level of communication, the students may act and perform communication assignments not only by taking some kind of role, but directly, in their own personae. Personal role playing may involve various types and components of classroom activities: improvisation, discussion, debates, and round table discussions.

Role playing, which lays the foundation for linguistic interactions within the group may utilize various forms of communication situations: dyads, triads, groups of four, teams, the entire group. During training in communication, dyads and triads are used most frequently. This makes is possible to keep the students within a strict linguistic framework. Frequent shifting of partners provides the opportunity for multiple repetitions and variation of the models. Each role playing situation typically ends with a final summary: either one pair performs the assignment before the group, or all members of the group are questioned about their performance of the assignment, or the same assignment is repeated by different pairs and their performance is graded, or one student reports to the group, etc. As already stated, at the final stages of work on a topic, personal role playing gradually shifts to discussion and debate in which all group members participate.

The different types of role playing differ not only in the stage at which they are appropriate, but also in how they relate to the overall topic of the course. The overall topic, which is contained in the textbook, is embodied in the role playing of the first lesson. The topic of the second lesson is developed only during the introductory stage of instruction, while for subsequent classes a new topic is assigned for the communication exercise. Role playing exercises may relate to the topic of a whole microcycle of a several classes. Three or four role playing exercises in one class session may be unified by the fact that they all pertain to a single topic.

Role playing combines subject matter instruction

and general education, and is in accordance with the principle of achieving individual learning through group instruction and learning. In this regard, we may speak of the general educational function of role playing. This function includes, first and foremost, the potential influence of the roles played on the personality of the role player. Playing the roles of honorable, sincere, benevolent people has a positive effect on the personality development of the student. In role playing, the personality traits of the students also develop through their performance of roles corresponding to their own individual tastes and moods.

Successful role playing depends on many factors: acceptance of the role, linguistic competence, coordination between partners, the ability of the leaders to lead the other participants, etc. Experience shows that the rational use of role playing at all stages of instruction in a foreign language facilitates an increase in the efficacy on the process through increasing motivation and interest in the subject being studied, through developing stable habits and skills for linguistic activity in a foreign language, and also through the direct utilization of these skills and habits in communication.

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On Reading, Teaching Reading and *Affective Semantics*

Elena Doshlygina
The University of Tulsa

Donald L. Dyer
The University of Mississippi

ABSTRACT

The goal of instruction in a foreign language should be to prepare students for communication in both oral and written forms of the language. During the successful acquisition of both types of skills, the student first recognizes—and then comprehends—the linguistic symbols he perceives. Particular to the reading process, however, is one's perception of *textual meaning*. The most complex component of textual information-processing is the general integration of textual meaning into *sense*. The purposeful development of a mechanism for integrating sense into the individual experience of the learner is crucial for the performance of success-

ful communicative acts. This paper explores the various factors involved in the processing of linguistic symbols during reading and seeks to explain how an understanding of these factors might better serve the teacher.

Introduction

The present article in its claims and implications represents many of the views of the Russian school of pedagogical thought fostered in the 1970s by Igor Shekhter, a prominent psycholinguist, philosopher and pedagogue. Shekhter worked closely in both Sofia and Moscow with the noted Bulgarian, Georgi Lozanov, developing the system of foreign-language teaching known as *Suggestopedia*. Two major approaches to the teaching of foreign languages developed in Russia as a result of their work: the *Affective Semantics* method, founded by Shekhter himself, and the method known as "Activization of Reserved Potentialities of Personality," which was developed by Galina Kitaygorodskaya. Both instructional methods were by design "intensive," representing what American pedagogues call "accelerative" learning. The results obtained from these methods were first-rate, and for a decade and a half, these two emerging pedagogical approaches — and the scholarship associated with them — represented alternatives to other, more established types of foreign-language training employed in Russia.

Shekhter's *Affective Semantics* approach to foreign-language teaching has at its core the earlier work of Lozanov, as well as that of Soviet psychologists and psycholinguists such as Vygotsky, Luria, Leontiev,

Bakhtin, Bassin and Zhinkin. Shekhter's work to date has not been published in English. The present article discusses much of the research done on accelerative learning in Russia in the late 1980s — particularly 1986-1990.

An orientation toward the semantic aspect of communication — and the affective level of information-processing which necessarily accompanies it — is central to the *Affective Semantics* approach to teaching foreign languages. According to Shekhter, in foreign-language instruction, we must take care to utilize the "dominant role played by the speaker's meaningful utterance under conditions which assume a motivation and a purposefulness of speech behavior."

In the following article, the authors discuss from a theoretical point of view the general concept of learning to read in a foreign language, and, subsequently, applying the *Affective Semantics* approach to the acquisition of reading competence. It is expected that this article will be the first in a series of articles which discuss the various learned competences in language acquisition, as well as the possible benefits to be achieved by building these competences through the use of *Affective Semantics*.

Perception, Comprehension and Understanding

On a psychological level, reading involves the processes of perception and comprehension. During

perception, recognition of linguistic units takes place, and during comprehension, disclosure of the subject content of another's thought occurs. Both processes are performed in order to achieve understanding. The perception of a text is directly related to the physical properties of the text, *i.e.*, the orthographic code of a text, the reader's visual organs, etc. The orthographic code acts as a "trigger" mechanism under the influence of which complex physiological processes begin in the reader's brain. These processes function as a psychological phenomenon; they include the perception of the graphic symbols of the written text and the mental activity of the reader. As we perceive written text in a native language, we do not *realize* that this process is motivated by graphic symbols. We comprehend directly the content of the text. Thus, the processes of perception and comprehension are closely interrelated, and they are carried out almost simultaneously. It is no coincidence that the term "perception of sense" (Russian *smyslovoe vospriyatie*)[1] is used in the psychological literature to denote a complex mental and mnemonic activity (Zimnyaya, 1976, p. 5). As we integrate sense, the "recognition-understanding of repeated elements of speech (*viz.*, language) and the intelligent understanding of the unrepeatable utterance" (Bakhtin, 1986, p. 134) take place. Once we recognize the complexity in-

volved in the phenomenon of integrating sense, its indivisibility and the interconnectedness of its components, we are able to identify, for the purposes of the analysis, the processes of recognition and understanding—with an aim to finding the most effective ways for teaching reading.

Because reading begins with perception, and perception culminates in the recognition of perceptual units, we shall first define *recognition.* According to, among others, Bernstein (1966), Bruner (1973) and Miller and Johnson-Laird (1976), the images we fix in memory and the traces of familiar objects or classes of objects lodged in memory both participate in the identification process. The process of recognition (here, synonymous with *identification*) is defined as a process of correlating a given object to a certain known category of objects already fixed in memory (Shekhter, 1981, p. 6). The literature on visual identification suggests that the process of matching receivable perceptual material with traces of memory is a necessary link in the recognition process.

Experimental data show that in the process of matching the most active traces are those which correspond to the more meaningful ones, particularly with regard to the personality traits of the reader. There is a clear, established correlation between the perceptual material that is being received and a given trace or com-

plex of traces. When we discuss mechanisms for recognition, it is necessary to distinguish two basic types of recognition; namely, recognition through a set of indicators, and recognition by matching certain given material with an integral *template*[2] (Shekhter, 1981). Understanding the mechanism for recognition is important in the pedagogical process, because a better understanding of the mechanism can lead to a more effective and economical means for recognition.

Let us now take a look at the *perception of sense*. By "perception of sense," we have in mind a general, simultaneous identification activity of both reception and comprehension of the utterance. *Simultaneous* recognition is the most interesting among the modes of recognition. We know that after acquiring a certain experience, one does not correlate one object to another object based on a certain set of indicators; the reader simply identifies an object as one object or another. Recognition occurs extraordinarily quickly. It can occur instantaneously and simultaneously. It should be noted that, after a certain identification exercise, multifaceted stimuli become single-faceted stimuli for the receiver of the information. Sensory material that is received through the perception of a set of indicators becomes integrated into one indivisible perceptual unit, as a result of which a corresponding template is formulated in the memory of

the receiver of the information. Thus, the expansion of the units of perception and recognition from simple to more complex structures acquires an especially important significance. According to existing hypotheses, instantaneous recognition occurs not through an evaluation of a set of indicators, but through an evaluation of an integral, fused perceptual unit which participates in the process of matching in the same way as does a single indivisible unit. In the identification of visual material, the identification of a perceptual type is more natural, simpler and considerably more effective, in terms of speed, than conceptual identification (Shekhter, 1981, p. 91). At present, the matter of simultaneous recognition cannot be considered extensively studied. However, studies on functional asymmetry of the brain in patients with dissected brain, neuropsychological studies of the right and left hemispheres of the brain, and research on information-processing confirm the hypothesis that perceptual images play a considerably more important role in the identification/recognition activity of humans than was previously thought (Deglin, Balonov & Dolinina, 1983; Gazzaniga, 1988; Ivanov, 1978, 1993; Jacobson, 1980; Lindsay & Norman, 1977; Samuels & Kamil, 1984; Segalowitz, 1983; Vein, 1983).

Let us now consider the problem of simultaneous recognition as it relates to the reading of a text in a for-

eign language. The development of simultaneous recognition in students is essential for reading. The process assumes that the reader's attention is focused on the content of the text, and not on the form of the language. In order to guarantee whole recognition during reading in a foreign language, readers must rely on that linguistic knowledge which resides in their experience as learners. Words, word combinations and their components, grammatical indicators for word forms, and other morpho-syntactic units can be recognized if the inventory of the corresponding templates is retained in the long-term memory of the perceiver (reader).

Thus, one's mnemonic activity is an important prerequisite for realizing the perception of meaning, because in order to interpret written textual meaning, it is necessary to rely directly on long-term memory. If a reader's linguistic basis is not well-established—or if it is not sufficiently developed—the actions which are performed in an attempt to perceive textual meaning are performed at intervals that impede the extraction of information from the text. The following factors are important for developing efficient simultaneous recognition in a reader:

- the formulation of whole forms for reflecting liguistic units;
- the expansion of psychological units of perception

and identification;

- the contextual varying of linguistic units; and
- the reorientation from a conceptual to a perceptual type of recognition.

The most effective way of creating an "inventory" of repeatable linguistic units in the long-term memory of a student is to give the learner oral-language experience. During oral communication, the formation and consolidation of acoustic and kinesthetic images of lexical units occur, as does the enriching of words with contextual relationships of meaning.

Meaning and Sense

To this point we have analyzed the initial phase in the process of reading, without which the perception of textual meaning cannot be realized. We now turn to the psychological process which reflects comprehension, an aspect of the analysis which results from the reading.

The analysis of the process of understanding linguistic communication during reading represents one of the most difficult problems and one of the least developed areas of study in the field of psycholinguistics. The process of reading comprehension is extremely complex, and no sufficiently objective means for its investigation

have been proposed. The field of psychology teaches us that understanding relates to the sphere of thinking, and that it is one of the types of complex mental activity. Foreign language pedagogy demonstrates to us that comprehension involves revealing relationships of textual sense that are conveyed by means of linguistic form. The final link in the comprehension process is integration of the sense of the text. Thus, at all stages of teaching reading we are able to see an orientation toward the development of a mechanism for understanding sense through an arousal of the learner's mental activity.

Let us now consider carefully the concept of sense and discuss the problem of the comprehension of text from the perspective of the formulation of textual sense. In the philosophical, linguistic and psycholinguistic literature, "sense" is considered an extralinguistic phenomenon that pertains to the sphere of thought (Slyusaryova, 1963, p. 196). Zhinkin (1982), gives the following definition: "Sense is the integration of concrete meanings, or ... an integrated sense relationship of two linguistic units." According to Zhinkin, the formulation of sense takes place "in a special mechanism for communication" (p. 176), and many argue that the study of sense and the processes for its formulation should be a central topic of study in the area of interpersonal communication.

Sense is realized in meaning, and meaning is a critical part of the inner workings of a language. The meaning of linguistic units and of the sense which is being conveyed by them exist in a "re-coding" relationship (Bondarko, 1978, p. 51). The direction which re-coding takes depends on the relative positioning of the speaker (or writer) and listener (or reader): the speaker re-codes into meaning sense that is being transferred, and the listener (or reader) re-codes into sense linguistic symbols that are being perceived. Thus, speech acts begin with sense and end with sense, as long as communication involves an exchange of ideas, and not simply an exchange of linguistic meanings.

The matter of the correlation of meaning and sense involves speech communication and often is discussed within the framework of textual analysis. The problem of the relationship between meaning and sense was first raised in the psycholinguistic literature by Vygotsky (1986). He drew a distinction between word meaning (Russian znachenie), which reflects a generalized concept, and word sense (Russian smysl), which depends on the context of speech. The sense of a word is the sum of all the psychological connotations raised by the word in a person's consciousness. It is a dynamic, complex, fluid whole which is comprised of several zones of unequal stability. Meaning is only one of the zones of

sense. It is the most stable and precise zone. A word acquires its sense from the context in which it appears; in different contexts, it changes its sense (Luria, 1979b, pp. 53-54). According to Vygotsky (1986, p. 245), the predominance of sense over meaning, of sentence over word, and of context over sentence is a rule of inner speech (Vygotsky's term, 1986, pp. 225-226).[3] He argues that the "... enrichment of words by the sense they gain from the context is a fundamental law of the dynamics of word meanings. A word in a context means both more and less than the same word in isolation: more, because it acquires new context; less, because its meaning is limited and narrowed by the context." Vygotsky's ideas were developed further in the works of Bassin (1973), Kozulun (1990), Leontiev (1973), Leont'ev (1974), Leont'ev (1981),[4] Luria (1975, 1979b) and other representatives of Vygotsky's school of psychology and psycholinguistics.[5] The categories of meaning and sense play an important role in the analysis of the most significant aspects of the correlation of language and thought, which are indeed the most important components of human consciousness.

Every text perceived by the reader begins with the perception of separate words, then passes on to the perception of separate phrases, finally reaching the perception of an entire piece of text and the disclosure

of its textual sense. This sequence should be understood, however, only as a logical one. In actual comprehension, as in recognition, the content of textual meaning is obtained not in a linear sequence; instead, "[i]t is captured in a complex fashion, simultaneously, like a musical chord" (Zvegintsev, 1973, p. 163). Even during the earliest stages of reading a text, hypotheses arise concerning the meaning of the entire message, and the comprehension of separate words or phrases functions as a subordinate, auxiliary operation. The formal components of the text are not involved in the process of reading comprehension, because they are perceived and processed on the level of the subconscious. Zhinkin (1982) has shown that sense relationships cannot be established in advance, but that grammatical relationships can. Sense relationships should be located, discovered and integrated during the process of textual comprehension. Just as the sense of a separate sentence is not comprised of the meanings of its separate words, the sense of the whole text or utterance does not result from a chain of separate, isolated phrases. In Shcherba's (1974) words, "... this is the process of adding senses, resulting not in a sum of senses but in new senses." Each successive phrase "flows from" and includes the meaning of the previous one. This phenomenon, which Vygotsky called "influx" of the senses (1986,

p. 246), in effect describes for us a kind of comprehension of the main content of the text as it takes place.

In inner speech, text is compressed into a concept that contains a "clump" of the textual excerpt. Thus, analyzing the inner sense of the text becomes the most important component of textual comprehension, the psychological structure of which remains poorly understood even today. Further studies in the areas of neurophysiology and psycholinguistics should result in the creation of abstract models of real psychological processes for text decoding. Luria (1975, p. 179) has noted that "[a] psychological model of text-sense (Russian tekst-smysl) will differ considerably from a linguistic model, since in the linguistic model correspondences between sense and text are considered separately from real psychological processes which take place in the mind of the participant during the communication, and these linguistic models are limited by the text." In psycholinguistics, when one analyzes the structure of sense, text is interpreted as a communicative unit and is framed as a triad of items consisting of [producer—text—perceiver]. A text is understood by funneling it through a "prism of communication" and in this way it presents the readers with a means of actualizing their mental activity. The comprehension of textual sense, then, appears not as a frozen, static schema, but in a

state of dynamic development, as a process of "instilling the thought in a word."

Since in inner speech text is compressed into a concept, and the concept contains the whole text segment, the foundation for compressing text into sense performed by both the speaker and the listener/reader becomes the "sense-formulation" of the utterance. The central "sense link" (Russian smyslovoe zveno) remains invariable, regardless of the kind of speech activity performed, despite the fact that during any speech activity the forms for input and output of speech signals change. Zhinkin's (1982) theories are often followed by Russian psycholinguists. In his works, text is interpreted as an integral semantic-sense structure, as a hierarchy of sense-formulations with different degrees of complexity and with different degrees of significance. A text's sense structure is understood through its implementation in inner speech during a process which culminates in the "folding" of an utterance's content into the utterance's predicate. Vygotsky (1986, pp. 246-247) refers to this as the "influx of sense." He wrote "[t]he senses of different words flow into one another—literally "influence" one another—so that the earlier ones are contained in, and modify, the later ones." Every text presents us with a more or less complex utterance about reality. At the core of each piece of text lies a judgment

about real objects or about different facts or situations. Each text's reference to reality is one of its indispensable characteristics.

In order to understand a piece of text one must perform a whole system of transformations. This system of transformations generally involves the following stages: (1) a "code transfer," which results in a relatively complete sense for the phrase at issue; (2) a "sense block," which involves a realization of phrasal unity; and (3) the formulation of a "sense field" which extends throughout the entire text (Buchbinder, 1978, p. 34). As we read, linguistic meanings are transformed by means of a "universal subject code" (Zhinkin's term [1982, p. 21]) into "denotation," a means for representing reality. The process of denotating is the same as the act of comprehending. Denotations are integrated into the text as it develops, and the integration of the subject matter is predicated on one's interpretation of denotations. As readers decode text, they search for the unknown, for the new, the reason for which the text was created. The text is then understood by relating it to the readers' known set of linguistic units.

In order for the reader/listener to understand the author's integrated semantic goal of communication, it is necessary to access continually the experience and knowledge that the text does not readily contain. One

requires not just a knowledge of the language in which the text is composed, but also a certain set of interconnected bits of information that relate to the content of the text. As Brudny (1975, p. 112) explains, "... the structure and the semantics of the text are formulated as one part of a complex mechanism, the other part of which is contained in the consciousness and memory of the individual perceiving the text. When these two different components interact, the processes of textual perception and understanding take place." Thus, it is understanding, which is by nature active and creative, that completes the process of textual perception.

The process of decoding (during which one identifies denotations) is guided by sense. One must understand the nature of linguistic units and the way they are used in order to make sense of them. Studies by Bakhtin (1979, 1981), Brudny (1975), Bruner (1990), Miller (1975), Zhinkin (1982) and others have shown that this knowledge develops only during oral communication. In order to achieve effective understanding during reading, one must perform a kind of "sense-making" (Russian *smysloobrazovanie*).

Teaching Reading

During the past decade, the simultaneous teaching

of both reading and speaking skills in a foreign language has become more popular. Experimental data of a far-reaching nature which have been stockpiled in the areas of speech physiology, neuropsychology, psycholinguistics and discourse analysis support the claim that there is a common character to certain psychophysiological mechanics functioning during speech (Horowitz & Samuels, 1987; Luria, 1975, 1979a; Miller, 1975; Penfield & Roberts, 1966). These data now serve as an objective basis for various kinds of interrelated teaching. Different types of speech activity are formulated during the earliest phases of foreign language teaching. Thus, for teaching to achieve maximal efficacy, it must take into account these activities, since whole instruction is based on certain common psychological mechanisms.

Psychophysiologically, the oral aspects of communication (speaking and listening) and reading are closely interrelated. Because they are the linguistic forms through which speech is realized, they perform one and the same communicative function and have a common physiological basis: they form a second system for "signaling," one which is inseparably linked with the first. Since effective speech communication assumes an understanding of speech and the possibility of its production for the expression of sense, the perception of

sense occuring during reading and listening, as well as the expression of sense which occurs during speaking, should be considered an expression of verbal-communicative function with a different orientation (Zimnyaya, 1985, p. 85), one that realizes a complex process of mediated interaction between man and the surrounding environment.

During a communicative act, speakers and listeners are involved in a single "speech-thinking" process (Russian rechemyslitel'nyj protsess), the core of which creates a mutually conditioned relationship between these two complementary processes—speech and thinking. The mechanisms of speech production and perception, which unfold during speech communication, play equal roles in this process. Speech production is not only a process of producing text, but also a process for formulating sense, since speech production is a single, whole process for producing both thought and speech. Reading, which assumes understanding, is also impossible without thought. The difference in producing and perceiving speech is in the direction of movement: "while the process of speech production moves from the elements of consciousness to speech and represents the process of 'unfolding' latent knowledge into speech forms, the process of speech perception moves from prepared texts to elements of consciousness and rep-

resents the process of 'folding' texts into specific forms of knowledge" (Katsnelson, 1972, p. 126).

Inner psychophysiological mechanisms for different forms of speech communication are closely related. This is confirmed by the fact that during communication, substitutions of linguistic units with equivalent meaning are made, replacements which ensure for the exchange of information (Zhinkin, 1982; Kuzmenko-Naumova, 1980). Both reading/listening and speaking take place in inner speech (Vygotsky, 1986; Luria, 1975), and the transition points from whole words to general textual sense—and from the general sense of the message to full, outwardly expressed words—remain the same. Because the mechanism of sense-formulation underlies the various forms of speech realization, the speaker re-codes the transmitted sense into meanings, and the reader re-codes the meanings of perceivable linguistic units into sense.

Employing dialogue communication is regarded as a non-direct technique for developing the semantic aspect of communication. Teaching dialogue communication in a foreign language develops a speech mechanism for unifying sense perception and sense expression. Once this unification occurs in speech, it may be transferred to the process of textual comprehension in reading. This allows reading, from its very initial stage,

to be performed as an informative activity and results in the sense-processing of the linguistic information.

Using *Affective Semantics*

Since it creates maximally supportive conditions for the formulation of reading mechanisms by purposefully developing mechanisms of sense, the *affective-semantic* approach to teaching foreign languages (hereafter "AS") could be particularly effective in developing this skill. AS was developed in Russia in the 1970s by Igor Y. Shekhter (1973, 1977) and his colleagues. AS should be described, if nothing else, as an *intensive* style of teaching. At its core are certain pedagogical tenets espoused by the Bulgarian George Lozanov and the method of teaching he developed known as *Suggestopedia* (Lozanov, 1977; Schuster and Gritton, 1986). AS, however, was later reworked to incorporate certain basic principles of psychology and psycholinguistics developed by Vygotsky (1968, 1986), Luria (1975, 1979b), Leontiev (1973), Leont'ev (1974) and Zhinkin (1982). Shekhter's work (1973, 1977), following Vygotsky (1968), has also been instrumental in the development of this style of teaching.

An orientation toward the semantic aspect of communication—and the emotional level of information pro-

cessing which necessarily accompanies it—is central to the AS approach to teaching languages. In teaching language with this approach, it is necessary to take into consideration the mechanism for sense, and a teacher using this approach must implement this consistently throughout all stages of teaching and learning. At the core of this kind of teaching is, in Shekhter's (1973, p. 15) words, "... the dominating role played by the meaningful utterance produced by the speaker under conditions which assume a motivation and a purposefulness of speech behavior, *i.e.*, speech activity on the level of sense."

In AS, learning and teaching are viewed as *developing* language. Shekhter (1973), following Vygotsky (1968), does not view psychological development as progressing in a linear fashion, the individual passes through of a series of predetermined stages. In Vygotsky's words (1968, p. 73), development is a "complex dialectal process characterized by periodicity, unevenness in the development of different functions, the metamorphosis or qualitative transformation of one form into another, the intertwining of external and internal factors, and adaptive processes ...." The distinction between meaning and sense—or inner meaning—constitutes a significant distinction in Vygotsky's theory. The learner's personality must be considered in the teaching process,

because language is regarded as a component of personality structure. Since language and speech have a place in the adaptation of personality to reality, the *AS* approach attaches great importance to the *content* aspect of speech. Because of this, learners of a foreign language, particularly adults, are made to solve problems appropriate for their intellect level. Focusing on the content aspect of an utterance, and not on its formal characteristics, allows for a transfer of speech interaction from an instructional level to an emotional level of communication.

AS considers meaning which evolves from the comprehension of an utterance to be a certain constant. Sense, however, is a variable that is conditioned by the personality of the speaker, and the speaker chooses different means for influencing the interlocutor during the time of the speech communication. This tenet of the teaching philosophy, then, is extremely important, since an utterance is designed by a speaker not because of any predisposed plan, but is produced due to an instantaneous evaluation of the flow of reality (Shekhter, 1973). Many factors are thus involved in creating a form of motivated and goal-oriented speech. Sense only acquires meaning when it is actualized in the broad context of a dynamic, constantly changing reality. Knowing a language at the level of acquiring a "sense" for it means

being able to use it with a certain personality and with a particular behavior, and being able to make it sensitive to certain motivations and certain goals which are defined by changes in the course of the activity associated with the content of the information exchange.

AS focuses on the integrated wholeness of the psychological processes which condition speech behavior. The speech act is not only an act of thought or intelligence; it is also an act of emotions, intentionally-directed thoughts and feelings expressed by the speaker. "Emotional regulation," as psychologists and psychophysiologists use the term, represents a critically important part of the communication, and it is continuously manifested at all levels of the process—during speech-thinking, during the organization of speech-thinking processes, during production of the utterance, and during the assignment of sense to speech content (Simonov, 1986). Actualization of the emotional sphere of personality is important for intensification of the sense-formulation process as one acquires a foreign language. As a learner moves from the initial perception of a text to the formulation of speech, phenomena of an emotional nature inevitably occur. Their functioning leads to the formulation of a certain emotional-affective background which, according to psycho-semantic studies of the last decade (Artem'eva, 1980; Shmelyev, 1983), is reflected

in the emotional coloring of meanings. As learners read, it is important for them to grasp the background which stimulates their entrance into the layers of sense in the text. During reading it is extremely important to orient oneself emotionally in order to integrate linguistic meanings into sense structures of consciousness.

The oral experience serves only as a starting point for the learner when a teacher employs the *AS* approach in teaching language in general, and reading in particular. The teaching of reading is raised in an *AS* framework to a qualitatively new level, because it is within *AS* that the most attention is given to formulating a mechanism of sense in the individual speech experience of the learner. From the very beginning during this kind of learning, students are immersed into a perceptible multi-dimensional language reality. The *AS* approach capitalizes on the natural development of language abilities and their natural awakening in the human mind. Teaching with *AS* involves the learners in direct communication for the solving of typical daily-life tasks, tasks that emerge in the course of a changing reality.

All of the techniques employed in an affective-semantic approach to teaching foreign languages are directed toward the activization of speech and thinking in the learners. Effective teaching should include proper

motivation and proper mechanisms for sense-formulation, and it should involve appropriate emotional motivation. The *affective-semantic* approach to teaching is a holistic approach which attempts to direct learning to both the left and right hemispheres of the brain. Learning involves both the conscious and the unconscious. This methodology is designed to enable the learner to unleash reserve capacities residing in the personality and to utilize—and capitalize on—the emotional aspects of language learning, the significance of which arguably has heretofore been ignored and/or greatly neglected.

Notes

The present manuscript is in significant part an adaptation of Chapter 1 of the first co-author's *kandidatskaya* dissertation (Doshlygina, 1987). Its present form is the result of a year-long collaborative effort with the second co-author. Confirmation of and support for the observations made on the material herein have been gained over the past several years through the co-authors' Russian-language teaching activities at The Universities of Mississippi and Tulsa.

1 Original Russian terms are given throughout this

manuscript alongside the English. It was the feeling of the co-authors that in doing this, we would give the reader greater latitude in interpreting certain material herein and, at the same time, convey the sense that the foundation for much of this material lies in *Russian* schools of pedagogy.

2 A "template" should be understood as an image, fixed in memory, which represents an object or class of objects. The *template* serves as a basis for comparing a perceptual image to a particular object (Shekhter 1981, p. 12).

3 He defines *inner speech*, which "represents a subjective form of the language of which the speaker is unaware," as the "mechanism which converts certain meanings of speech into internalized subjective thoughts."

4 The reference *Leont'ev 1981* is to Alexei N. Leont'ev, while the references *Leontiev 1973* and *Leont'ev 1974* are to his son, Alexei A. Leont'ev.

5 For an interpretation of the development of Vygotky's ideas in western psychology, see Kozulin (1990), Wertsh (1991), and Newman and Holzman (1993). For a discussion of the application of Vygotsky's sociocultural theories to second-language acquisition, see Lantolf (1994).

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STUDY OF HEALTH CONDITION, LOCUS OF CONTROL AND SELF-CONCEPT OF ADULT STUDENTS IN THE PROCESS OF FOREIGN LANGUAGE SUGGESTOPEDIC LEARNING

Milen Nikolov
Suggestology Research Institute
Sofia, Bulgaria *

** Requests for reprints should be sent to Milen Nikolov - Suggestology Research Institute, Angel Kanchev Str. 5, 2nd floor, Sofia 1000 Bulgaria*

Abstract

A review of research carried out until now on different physiological, psychological and clinical variables in the process of suggestopedic learning is presented in this article. The results of this study show that as a whole there are no changes or only marginal beneficial changes on the variables of health condition, locus of control and self-concept assessed in the process of one-month half-day foreign language suggestopedic courses with adults.

Suggestopedia originates from psychotherapy. It is an application to education of the "integral psychotherapy" developed by Dr. G. Lozanov. Suggestopedia is also viewed as "learning psychotherapy" (Lozanov, 1971,p. 19; 1973, p. 651; 1978, p. 66-67; Lozanov, Gateva, 1981, p. 20, 109; Lozanov, 1990a, p. 10-14). Despite the fact that in most cases the main purpose of suggestopedic learning is educational and not psychotherapeutic, previous research shows that in these cases suggestopedic learning has psychohygienic and psychotherapeutic effects as well. Different physiological, psychological and clinical variables have been studied in the process of suggestopedic learning on school and adult students, normal samples, and also on samples of neurotics and border-line personalities.

A number of physiological indices related to students' emotional state and general health condition have been studied in the process of suggestopedic learning. These are mainly cardiovascular system indices. Some slight changes have been registered. Comparisons of data obtained during the day - before and after classes, show that after classes the students' pulse decelerates and the upper limit of blood pressure decreases. It was also found that at the end of one-month foreign language

suggestopedic courses the students' upper limit of blood pressure decreases. These results, with some variations, have been obtained in studies on different samples. It has been concluded that despite the considerable amount of material to be studied and the fast pace at which students master it, the suggestopedic teaching method does not have unfavorable impacts on students' cardiovascular system and rather these effects are beneficial (Balevski, 1968; Lozanov, 1971; Balevski, 1973; Kolarova, Balevski, 1973; Lozanov, Balevski, 1973; Lozanov, 1990a; Gateva, 1990). Certain indices related to (dys)functions of autonomous nervous system of neurotics have also been studied before and after suggestopedic courses. Considerable decrease has been observed with their hypersensitivity to mediators, especially to adrenaline, that is, functioning of the autonomous nervous system has been stabilized (Kolarova, Balevski, 1973). Recent research showed strengthening of the immune system in the process of suggestopedic learning. In this context it was supposed suggestopedia may occur beneficial in the treatment of AIDS (Lozanov, 1990a, 1991).

Continuous research carried out with adult students of the general population shows that the suggestopedic method is at least harmless to health.

According to the reports of the subjects (self-report inventories, questionnaires and interviews were applied) at the end of the course they usually feel calmer, more relaxed and joyful, easier and more self-confident. Lots of them feel they have become more kind-hearted, sociable, active, efficient and organized. Many of students feel a desire to learn and find their life being enriched. They do not feel fatigue, their mood and emotional state are improved. With many of them various neurotic symptoms and sufferings such as headache, insomnia, irritability, poor concentration, migraine, etc. become less intense or disappear. Inner tension, worries, depressed mood, suicidal thoughts are also reduced (Balevski, 1968; Lozanov, 1971; Velvovski, 1973; Lozanov, Balevski, 1973; Caskey, 1976; Milev, Noncheva, Anichkina, Dobreva, 1986; Milev, Noncheva, Anichkina, Safirova, 1986; Noncheva, 1986; Noncheva, Nikolov, Safirova, Tonchev, 1986; Nikolov, 1987; Lozanov, 1990a, 1990b, 1991; Shuck, 1991). Although it is sometimes possible to observe mild stress during the first few days of the suggestopedic courses, this stress has a quite positive function, as it stimulates activity and productivity of the individual (Lehmann, 1985, 1986). Research carried out with adult students of the general population shows that obsessions, phobias, premenstrual tension or depressive state, character accentuation, more

serious neuroses and depressions tend to be resistant and remain uninfluenced in the process of suggestopedic learning (Milev, Noncheva, Anichkina, Dobreva, 1986; Milev, Noncheva, Anichkina, Safirova, 1986; Noncheva, Nikolov, Safirova, Tonchev, 1986; Nikolov, 1987). Somewhat contradictory results have been obtained when anxiety trends have been studied (Milev, Noncheva, Anichkina, Dobreva, 1986; Milev, Noncheva, Anichkina, Safirova, 1986; Noncheva, 1986; Noncheva, Nikolov, Safirova, Tonchev, 1986; Spassova, 1989). As a whole shyness and timidity are not significantly affected (Nikolov, 1987) but there is also described a case of successful coping with them (Allen, 1976). The general health condition of students in schools applying suggestopedic method is better and the cases of neuroses are rare when compared with control schools (Lozanov, Balevski, 1975; Lozanov, 1978; Noncheva, 1986; Milev, Stambolova, Noncheva, Terziev, Kostova, 1989).

Research carried out with adult students - neurotics and border-line personalities, some of them university students, shows that at the end of the course the emotional state of many of them improves. Headache, depressed mood, some symptoms of the autonomous nervous system and some psychosomatic disorders fade or disappear. Many of students regain normal

sleep and appetite. For this population the suggestopedic courses play a recreational and resocializing role (Lozanov, 1971; Kolarova, 1973; Kolarova, Balevski, 1973; Velvovski, 1973, 1975; Kolarova, Balevski, 1975; Kolarova, Sharankov, Kardashev, Buchvarova, 1975; Lozanov, 1978; Milev, Noncheva, Anichkina, Dobreva, 1986; Milev, Noncheva, Anichkina, Safirova, 1986; Noncheva, 1986; Noncheva, Nikolov, Safirova, Tonchev, 1986; Lozanov, 1990a; Shuvalova, 1991). Distinguished neurotic complaints, obsessions, irritability, and character disorders remain unchanged (Milev, Noncheva, Anichkina, Dobreva, 1986; Milev, Noncheva, Anichkina, Safirova, 1986; Noncheva, Nikolov, Safirova, Tonchev, 1986).

* * *

A study of certain variables of health condition and personality in the process of foreign language suggestopedic learning with adults was carried out by the author of this article *. These variables were insufficiently studied or not studied until now.

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In the context of "learning psychotherapy" the **health condition** of students in the process of foreign language suggestopedic learning was assessed. It was considered important to check the presence or absence of changes on different symptomatically loaded dimensions, although within the normal range.

The **locus of control** in the process of foreign language suggestopedic learning was also studied. This was regarded necessary because of the common criticism against suggestion approaches and techniques in psychotherapy and education. This criticism usually implies that the subjects of suggestions become dependent on the person conducting these suggestions, pass to him/her the responsibility for the decisions to be taken, and their capability for personal control over own behavior and the environment decreases. However when suggestopedic teaching and learning were considered there were no empirical studies of the issue. In this study the presence or absence of change on the personality dimension of locus of control at the beginning and at the end of the course was checked. It was assessed to

what extent students associate what is happening to them with their own efforts, behavior, responsibility and sense of control (internal locus of control) or with the decisions of the powerful others, dependency on them and concurrence of circumstances (external locus of control).

The students' **self-concept**, **ideal-self**, and **the degree of congruence-incongruence of these two images** were also studied. The self-concept is considered an aggregate of relatively constant, stable and self-evaluated images of the person about him/herself. The self-concept provides the individual with a sense of identity, determinates to a great extent the interpretation of own experience and also - the expectations. The ideal-self is considered an aggregate of self-images: what the person aspires and/or dreams to be. The ideal-self is normative, sanctioning, and determinates to a great extent the goal-setting and evaluation of the outcomes of one's activity. In this study the degree of congruence-incongruence of the self-concept and ideal-self, as a measure of self-acceptance, was also assessed.

METHOD

The following inventories were administered:

Symptom-Check-List (SCL-90-R) (Kokoshkarova et al.). This is L.R. Derogatis's inventory, adapted, approbated and standardized for the Bulgarian population (working version). The Symptom-Check-List is a multidimensional self-report inventory comprised of 90 items. Each of them is rated on a five-point scale of distress. There are nine dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Anger-Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. There are also a few additional items (concerning eating and sleep disturbances, certain distressful thoughts) which do not fit into any dimension but count for the global indices. The three global indices of the inventory are: the General Symptomatic Index (combines information on number of symptoms and intensity of distress), the Positive Symptom Distress Index (an intensity measure), and the Positive Symptom Total (the number of symptoms). The check-list can be used for assessment of normal and clinical populations.

Locus of Control Questionnaire (Velichkov et al., 1987) - was constructed of inventories from J.B. Rotter, D. Reid and E.E. Ware. The questionnaire consists of 15 forced-choice items along with 5 filler-items. The locus of control on the I-E dimension (internal vs. exter-

nal control) is assessed. Studies on the Bulgarian population confirming the reliability and validity of the questionnaire were carried out (Velichkov et al., 1987).

Personality Semantic Differential - was designed by Milen Nikolov on the basis of Osgood, Suci, Tannenbaum's (1957) and Petrenko's (1983) works. Applying this measurement technique, by mean of pairs of opposite adjectives, on 7-point scale, the self-concept ("Me - as I am") and the ideal-self ("Me - as I would like to be") were depicted by the subjects. Out of the initially comprised pairs of opposite adjectives some were eliminated on statistical ground and 14 saturated with "evaluation" pairs were retained. These pairs were: Unpleasant - Pleasant, Cold - Warm, Bitter - Sweet, Sad - Joyful, Weak - Strong, Unattractive - Attractive, Passive - Active, Faked - Genuine, Pessimistic - Optimistic, Bad - Good, Morbid - Healthy, Destructive - Creative, Constrained - Easy, Fragmentary - Entire. The direction of the pairs in the answer sheet was determined randomly. Global Indices for the self-concept and ideal-self were calculated. The degree of congruence-incongruence of these two images in the semantic space of students (the distance measured in scale units) was also assessed.

SUBJECTS

The sample consisted of 53 adult students, men (N=27) and women (N=26), who studied English at the Suggestology Research Institute in Sofia. Most of them (76%) had University education - engineers, economists, physicians, philologists, researchers, etc. The others (24%) had graduated from vocational and highschools - there were nurses, clerks, technicians among them. The age of the students ranged between 18 and 55 years (mean age = 36.4). Students of age below the average /18-36 years/ (N= 30) and of age above the average / 37-55 years/ (N= 23) were considered as groups of subjects as well.

PROCEDURE

The foreign language suggestopedic courses met for one month. Classes were held for half a day, in groups of about 12 students. The subjects were administered the aforementioned inventories twice: at the beginning and at the end of the course. The results of these two assessments were compared: for the whole sample and for the groups of men, women and students of age below and above the average.

RESULTS

The Symptom-Check-List data of the sample corresponded to the (inconclusive) normative data of the inventory. Results of the assessments at the beginning and at the end of the course showed considerable stability - the correlation coefficients for the studied dimensions were high and for the General Symptomatic Index r=.84 (p=.00).

The mean (raw) values on the Symptom-Check-List dimensions and global indices for the whole sample from the two assessments are presented in Table 1:

Dimensions and Global Indices	At the beginning of the course m	At the end of the course m	Test of significance
Somatization	5.6	4.9	n.s.*
Obsessive-Compulsive	8.5	8.5	n.s.
Interpersonal Sensitivity	6.2	6.1	n.s.
Depression	10.6	9.7	n.s.
Anxiety	6.3	6.2	n.s.
Anger-Hostility	3.5	3.3	n.s.
Phobic Anxiety	2.2	2.3	n.s.
Paranoid Ideation	4.5	4.4	n.s.
Psychoticism	4.1	4.3	n.s.

General Symptomatic Index	55.8	54.2	n.s.
Positive Symptom Distress Index	141.8	135.5	n.s.
Positive Symptom Total	36.4	36.7	n.s.

*non significant at the .05 level

The data for the whole sample showed there were no changes on any of the assessed dimensions and global indices.

At the end of the course with men there was a decrease in the values of the Positive Symptom Distress Index ($p<.05$) and applying looser statistical criteria - on the dimensions Anger-Hostility ($p<.08$) and Depression ($p<.10$).

Considering the General Symptomatic Index at the beginning and at the end of the course the results of the students as single cases were also analyzed. There was no significant change with 84% of the sample. Significant change (more than one standard deviation) as decrease was observed with 8% and as increase with another 8% of the sample.

The data obtained by Locus of Control Questionnaire were consistent with those of the normative sample. The results of the assessments at the beginning and at the end of the course showed stability: the correlation coefficient was r=.88 (p=.00).

The results of the whole sample are presented iin Table 2 (the higher the score, the more external locus of control is):

Table 2

	At the beginning of the course	At the end of the course	Test of significance
Locus of Control	7.1	6.9	n.s.*

*non significant at the .05 level

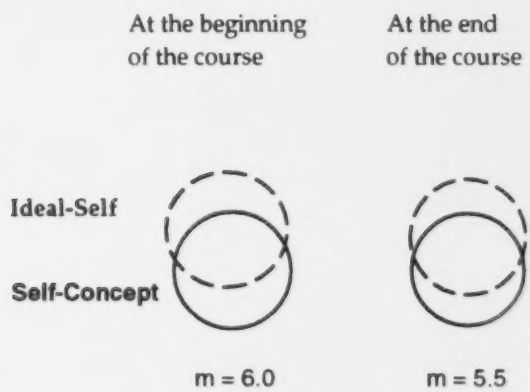
There was no change on the I-E dimension in the process of foreign language suggestopedic learning in the whole sample as well as in the groups formed according to sex and age of the subjects. The results of the students as single cases were also analyzed. There

was no significant change with 92% of the sample. Significant change (more than one standard deviation) in the direction of internal locus of control was observed with 4% of the sample and in the direction of external locus of control with another 4% of the sample.

Results obtained through the Personality Semantic Differential showed no change in the Global Index mean value of the self-concept. Assessments at the beginning and at the end of the foreign language course showed stability of the Global Index with a correlation coefficient of r=.78 (p=.00). At the end of the course there was some increase in values of the characteristics "Strong" (p<.01) and "Healthy" (p<.06). The values of the ideal-self at the beginning and at the end of the course were higher than those of the self-concept when the characteristics of each were taken separately and the Global Indices as well (p<.02 to p=.00). At the end of the course there was no change in the Global Index mean value of the ideal-self. Assessments at the beginning and at the end of the course showed stability of the Global Index of the ideal-self: r=.80 (p=.00). At the end of the course there was some decrease in values of characteristics of the ideal-self: "Genuine" (p<.02) and "Optimistic" (p<.03). A decrease was observed with men of the sample on the characteristics of the ideal-self

"Attractive" (p<.02), "Joyful" (p<.04) and on the Global Index (p<.04). An increase was observed with women on the characteristic of the ideal-self "Joyful" (p<.02).

The degree of congruence-incongruence of the self-concept and ideal-self in the semantic space of students (the distance measured in scale units) is presented in Figure 1:


At the beginning of the course
At the end of the course
Ideal-Self
Self-Concept
m = 6.0
m = 5.5
Distance between the two images (in scale units)

Some tendency to more congruent self-concept and ideal-self (shortening of the distance between the two images) at the end of the course was observed. It was significant with younger students (18-36 years)

($p<.04$) and applying looser statistical criteria - with men ($p<.07$) and the whole sample ($p<.08$). No significant change was observed with women and older students (37-55 years) when considered separately.

Considering the distance between the self-concept and ideal-self at the beginning and at the end of the course, the results of the students as single cases were analyzed. There was no significant change with 81% of the sample. Significant change (more than one standard deviation) was observed as shortening of the distance between the two images with 11% of the sample and as lengthening of the distance with another 8% of the sample.

DISCUSSION

This study was carried out on a small sample but the results are quite clear and it would be expected that simple replication on larger sample would not give additional or different results.

The sample of this study is representative for the normal population. This probably explains the absence of changes of students' health condition or only certain marginal decreases on the assessed dimensions and

global indices of Symptom-Check-List. The results correspond with former studies of the issue carried out on normal samples.

The results obtained by Locus of Control Questionnaire showed no change on the I-E dimension in the process of foreign language suggestopedic learning. The common criticism against suggestion approaches and techniques in psychotherapy and education (that subjects of suggestions are becoming more dependent, less responsible, less capable for personal control over own behavior and the environment) when related to foreign language suggestopedic learning in one-month half-day courses seems groundless. Here we could specify these results. The suggestopedic teachers in most cases are competent, charismatic and influential figures for the students and our observations in the suggestopedic classes show that as a rule there is affective attachment of students to the teacher. Considering this certain changes with students' dependency, responsibility and sense of control in the context of their relationships with the teacher are not excluded but the study of locus of control did not show any generalized effects of this kind.

The assessment with Personality Semantic Dif-

ferential showed that the students' self-concept and ideal-self are relatively constant and stable. At the end of the foreign language suggestopedic courses some signs of improvement of self-concept and signs of "coming down to earth" of ideal-self were observed. The outcome was that there was a slight tendency to a more congruent self-concept and ideal-self, i.e., to better self-acceptance at the end of the course.

As a whole the results of this study showed there were no changes or only marginal beneficial changes on the variables of health condition, locus of control and self-concept assessed in the process of one-month half-day foreign language suggestopedic courses with adults. At the same time there was a small number of subjects with whom significant changes in one or another direction were observed and who should be studied with more individualized and in-depth techniques in future research work.

When suggestopedia is regarded as "learning psychotherapy" there are a few issues which should be considered in the further research. Some of them have already been considered but questions still remain and there are also studies where "elusive" methodology was applied. These issues are: comparisons with control

(non-suggestopedic educational and psychotherapeutic) groups - especially of adults; the issues of psychotherapeutic change, spontaneous change, absence of change and deterioration; the possible short- and long-term psychotherapeutic effects of suggestopedia; the relationships between educational attainments and possible psychotherapeutic effects; the relationships between suggestibility of students and possible psychotherapeutic effects.

CONCLUSION

Research into suggestopedic learning and its psychotherapeutic effects has many positive conclusions. The results of this study show as a whole no changes or marginal beneficial changes on certain variables of health condition and personality in the process of foreign language suggestopedic courses with adults.

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Sources of reference information on accelerated learning

The easiest access to published information on accelerative (-ed) learning, SALT, suggestopedia, and Super Learning is through the ERIC system available in many university and college libraries. Secondary sources are *Dissertation Abstracts* and *Psychological Abstracts* along with the periodic author and topic indices of the *Journal of Accelerative Learning and Teaching*. Chapter 3 of *Suggestive Accelerative Learning Techniques* (1986) by Schuster and Gritton [University of Toronto Press] has an extensive review of the literature then available.

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